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Evaluation of Licensing Act: Measuring Crime and Disorder in and around Licensed Premises, Research Study SRG/05/007 Supplementary Annex prepared for the Home Office

Original Citation

Newton, Andrew D. and Hirschfield, Alex (2008) Evaluation of Licensing Act: Measuring Crime and Disorder in and around Licensed Premises, Research Study SRG/05/007 Supplementary Annex prepared for the Home Office. Research Report. University of Huddersfield.

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Evaluation of Licensing Act: Measuring Crime and Disorder in and around Licensed Premises

Research Study SRG/05/007
Final Report Prepared for the Home Office
Supplementary Annex

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Hirschfield**

March 2008

This report was submitted July 2007.

The views expressed in this report are those of the authors, not necessarily those of the Home Office (nor do they reflect Government policy).

1. Introduction

The Licensing Act 2003 (LA03) hereafter referred to as the Act, came into effect on 24th November 2005. This supplementary annex forms a response to reviewer's comments, and forms part of a series of reports used in a study by the University of Huddersfield to measure the impact of the Act on crime and disorder in and around licensed premises. This research, commissioned by the Home Office, examines the impact of the Act in five case study areas. These were:

- Blackpool Unitary Authority (UA);
- Birmingham City Centre (police force area F1);
- Croydon Borough;
- Guildford Borough;
- Nottingham Unitary Authority (UA).

In addition to the final report, an individual annex has been produced for each area. The final report, the five individual annexes, this supplementary annex and the technical annex comprise a single research study. This research is part of a wider evaluation programme including a number of larger scale national measures and surveys. This supplementary annex provided a series of additional findings as a response to independent reviewers' comments and feed into the final report.

Research aims

The overall aims of the research were to provide a baseline indicator of levels of crime and disorder in and around licensed premises, and to examine the impact of the Act on patterns of crime and disorder in and around licensed premises. A number of specific research questions were formulated for this research:

- What patterns of crime and disorder exist in and around licensed premises?
- What other local factors may explain the prevalence of crime and disorder in and around licensed premises?
- Does the granting of extended opening hours for licensed premises lead to a change in crime and disorder in these licensed premises?
- Have overall levels of crime and disorder within town and city centres changed following the Act?
- Have the peaks of crime and disorder displaced to later or earlier periods?
- Has the profile of crime and disorder in and around licensed premises and associated hot spots changed in relation to new licensing hours?
- Are there any unintended consequences of the Act? For example, geographical displacement or diffusion of benefits of crime to surrounding areas.

Research design

The methodologies described in this report relate only to those used in the supplementary analysis. This is in addition to the original detailed findings for each study area supplied within the individual case study annexes, and the summary of findings provided in the final report. Within this supplementary Annex, the following analyses were considered:

- T tests (half yearly comparisons based on weekly values)
- Serious violence against the person analysis
- Weekday and weekend analysis
- Synthesis maps (average baseline to post implementation change) for violence against the person and criminal damage

The methodologies used and the findings of this analysis are presented below.

2. Statistical significance tests

T tests were run to determine whether there were any significant changes in crime between the baseline period and post implementation. Independent sample t tests were used for this analysis, as there is no reason why crime in one time period would influence crime in a subsequent time period. These were applied to violence against the person, criminal damage, and calls for disorder in each of the five case study areas. T tests were not run on sexual offences due to the small numbers involved. These were run on weekly crime counts in the baseline and post implementation periods. Due to potential seasonal fluctuations that may hide important changes that could only be observed in the first six months or second six months periods, each year was subdivided into a half year period. Weekly values were used as opposed to monthly values as this increases the sample size and reduced the standard error, thus making the test more robust. Thus for this analysis weekly crime counts for the following time periods were compared.

- Baseline (Year 1 A) 23rd November 2003 to 23rd May 2004
- Baseline (Year 1 B) 24th May 2004 to 23rd November 2004
- Baseline (Year 2 A) 23rd November 2004 to 23rd May 2005
- Baseline (Year 2 B) 24th May 2005 to 23rd November 2005
- Post Implementation (Year 3 A) 23rd November 2005 to 23rd May 2006
- Post Implementation (Year 3 B) 24th May 2006 to 23rd November 2006

Tests were run on corresponding times of the year, for example the first six months of year one of the baseline was compared with the first six months of the second year baseline (1A 2A), and in turn this was compared with the first six months of the post implementation period (2A 3A). The tables below present the results of this analysis for each crime type. Note for each crime type the mean weekly crime count for each of the six periods under consideration is presented. Below this are the results of the t-tests. Significant changes are highlighted in blue (for reductions) and red (for increases).

Table 2.1 demonstrates that during the baseline period, there were no significant changes in violence against the person in Guildford and Birmingham. In Birmingham there were also no significant changes in the post implementation period, although in Guildford there was a significant increase in the first six months of the post implementation period. In Blackpool there was a significant reduction in the second six months of the baseline period that was also reflected in the second six months of the post implementation period. In Croydon there was a significant reduction in the second six months of the baseline period, and both the first and second six months of the post implementation periods. In Nottingham there was a significant increase in the first six months of the baseline period, but in the first six months of the post implementation period this change had reversed to a significant reduction. Overall three areas (Blackpool, Croydon and Nottingham) experienced reductions in violence against the person for part or all of the post implementation period, and Guildford was the only area with a significant increase for the first six months of the post implementation period only

Table 2.1 Violence against the person t tests: half year comparisons based on weekly values

Birmingham		1A	2A	3A	1B	2B	3B
mean		69.4	71.6	74.7	68.3	70.3	73.8
Baseline (year 1 year 2)	1A 2A	t(26) = -0.639, p >0.05					
	1B 2B	t(26) = -0.628, p > 0.05					
Post (year 2 year 3)	2A 3A	t(26) = -0.878, p > 0.05					
	2B 3B	t(26) = -1.054, p > 0.05					
Blackpool		1A	2A	3A	1B	2B	3B
mean		99.0	99.4	94.9	121.6	112.9	99.4
Baseline (year 1 year 2)	1A 2A	t(26) = -0.08, p > 0.05					
	1B 2B	t(26) = -0.082, p < 0.05 Significant reduction					
Post (year 2 year 3)	2A 3A	t(26) = 1.104, p > 0.05					
	2B 3B	t(26) = 2.778, p < 0.01 Significant reduction					
Croydon		1A	2A	3A	1B	2B	3B
mean		125.0	130.3	111.0	141.0	119.8	111.1
Baseline (year 1 year 2)	1A 2A	t(26) = -1.134, p > 0.05					
	1B 2B	t(26) = 4.937, p < 0.01 Significant reduction					
Post (year 2 year 3)	2A 3A	t(26) = 4.763, p < 0.01 Significant reduction					
	2B 3B	t(26) = 1.937, p < 0.05 Significant reduction					
Guildford		1A	2A	3A	1B	2B	3B
mean		32.1	31.2	35.3	32.6	36.6	39.3
Baseline (year 1 year 2)	1A 2A	t(26) = 0.402, p > 0.05					
	1B 2B	t(26) = 1.853, p > 0.05					
Post (year 2 year 3)	2A 3A	t(26) = -1.944, p < 0.05 Significant increase					
	2B 3B	t(26) = -1.236, p > 0.05					
Nottingham		1A	2A	3A	1B	2B	3B
mean		154.3	187.7	165.2	168.2	179.1	188.1
Baseline (year 1 year 2)	1A 2A	t(26) = 6.458, p < 0.01 Significant increase					
	1B 2B	t(26) = -1.625, p > 0.05					
Post (year 2 year 3)	2A 3A	t(26) = 3.856, p < 0.01 Significant reduction					
	2B 3B	t(26) = -1.457, p > 0.05					
Baseline (Year 1 A) = 23 rd November 2003 to 23 rd May 2004 Baseline (Year 1 B) = 24 th May 2004 to 23 rd November 2004 Baseline (Year 2 A) = 23 rd November 2004 to 23 rd May 2005 Baseline (Year 2 B) = 24 th May 2005 to 23 rd November 2005 Post Implementation (Year 3 A) = 23 rd November 2005 to 23 rd May 2006 Post Implementation (Year 3 B) = 24 th May 2006 to 23 rd November 2006							

Table 2.2 shows the results of the t tests for criminal damage for the five case study areas. this shows that in the post implementation period only one areas experienced a significant change in criminal damage, Nottingham, where there were reductions for both the first and second six month periods. These changes reverse the significant increases that occurred here in both the baseline periods. In Blackpool Guildford and Croydon significant reductions that occurred in the baseline period were not continued into the post implementation period.

Table 2.2 Criminal damage t tests: half year comparisons based on weekly values

Birmingham		1A	2A	3A	1B	2B	3B
mean		22.4	23.0	21.5	20.7	21.4	23.4
Baseline (year 1 year 2)	1A 2A	t = -0.356, p > 0.05					
	1B 2B	t = -0.529, p > 0.05					
Post (year 2 year 3)	2A 3A	t = 1.027, p > 0.05					
	2B 3B	t = -1.225, p > 0.05					
Blackpool		1A	2A	3A	1B	2B	3B
mean		123.8	105.8	107.3	116.0	103.7	99.4
Baseline (year 1 year 2)	1A 2A	t(26) = 3.598, p < 0.01 Significant reduction					
	1B 2B	t(26) = 2.708, p < 0.01 Significant reduction					
Post (year 2 year 3)	2A 3A	t(26) = -0.289, p > 0.05					
	2B 3B	t(26) = 1.084, p > 0.05					
Croydon		1A	2A	3A	1B	2B	3B
mean		99.7	91.5	94.8	93.6	89.3	92.6
Baseline (year 1 year 2)	1A 2A	t(26) = 2.056, p < 0.05 Significant reduction					
	1B 2B	t(26) = 1.017, p > 0.05					
Post (year 2 year 3)	2A 3A	t(26) = -0.809, p > 0.05					
	2B 3B	t(26) = -0.892, p > 0.05					
Guildford		1A	2A	3A	1B	2B	3B
mean		47.2	41.5	44.7	41.3	40.1	40.3
Baseline (year 1 year 2)	1A 2A	t(26) = 2.39, p < 0.05 Significant reduction					
	1B 2B	t(26) = 0.401, p > 0.05					
Post (year 2 year 3)	2A 3A	t(26) = -1.562, p > 0.05					
	2B 3B	t(26) = -0.068, p > 0.05					
Nottingham		1A	2A	3A	1B	2B	3B
mean		230.0	266.7	212.8	223.0	249.5	215.5
Baseline (year 1 year 2)	1A 2A	t(26) = -4.26, p < 0.01 Significant increase					
	1B 2B	t(26) = -3.721, p < 0.01 Significant increase					
Post (year 2 year 3)	2A 3A	t(26) = 6.902, p < 0.01 Significant reduction					
	2B 3B	t(26) = 5.184, p < 0.01 Significant reduction					
Baseline (Year 1 A) = 23 rd November 2003 to 23 rd May 2004 Baseline (Year 1 B) = 24 th May 2004 to 23 rd November 2004 Baseline (Year 2 A) = 23 rd November 2004 to 23 rd May 2005 Baseline (Year 2 B) = 24 th May 2005 to 23 rd November 2005 Post Implementation (Year 3 A) = 23 rd November 2005 to 23 rd May 2006 Post Implementation (Year 3 B) = 24 th May 2006 to 23 rd November 2006							

Table 2.3 shows the results of the t tests for calls for disorder in the five case study areas. Guildford was the only areas to experience a significant increase in the post implementation period, and this occurred during the second six months of the post implementation period. Birmingham was the only area to experience a significant reduction in the post implementation period. In Croydon and Guildford significant reductions found in the baseline period were not carried into the post implementation period. In Nottingham only eight months of data is used baseline, and eight months post implementation. This is due to a change in the classification codes used for recording (see technical annex). No significant changes were observed although due to the data limitations the Nottingham analysis is less robust.

Table 2.3 Calls for disorder t tests: half year comparisons based on weekly values

Birmingham	T Test	1A	2A	3A	1B	2B	3B
mean		191.8	189.1	151.1	191.2	167.3	159.7
Baseline (year 1 year 2)	1A 2A	t(26) = 0.384, p > 0.05					
	1B 2B	t(26) = 3.818. p < 0.01 Significant reduction					
Post (year 2 year 3)	2A 3A	t(26) = 6.766, p < 0.01 Significant reduction					
	2B 3B	t(26) = 1.411, p > 0.05					
Blackpool	T Test	1A	2A	3A	1B	2B	3B
mean		380.5	358.2	334.5	424.5	413.6	439.9
Baseline (year 1 year 2)	1A 2A	t(26) = 0.964, p > 0.05					
	1B 2B	t(26) = 0.563, p > 0.05					
Post (year 2 year 3)	2A 3A	t(26) = 1.067, p > 0.05					
	2B 3B	t(26) = -1.437, p> 0.05					
Croydon	T Test	1A	2A	3A	1B	2B	3B
mean		247.3	212.0	202.2	256.7	227.6	228.3
Baseline (year 1 year 2)	1A 2A	t(26) = 4.982, p < 0.01 Significant reduction					
	1B 2B	t(26) = 3.665, p < 0.01 Significant reduction					
Post (year 2 year 3)	2A 3A	t(26) = 1.769, p > 0.05					
	2B 3B	t(26) = -0.116, p > 0.05					
Guildford	T Test	1A	2A	3A	1B	2B	3B
mean		103.7	91.3	88.1	91.1	94.0	103.5
Baseline (year 1 year 2)	1A 2A	t(26) = 2.618, p < 0.05 Significant reduction					
	1B 2B	t(26) = -0.717, p > 0.05					
Post (year 2 year 3)	2A 3A	t(26) = 0.559, p > 0.05					
	2B 3B	t(26) = -2.008, p < 0.05 Significant increase					
Nottingham	T Test	8 months baseline			8 months post		
mean		88.4			83.7		
Post (year 2 year 3)		t(35) = 0.9327, p > 0.05					
Baseline (Year 1 A) = 23 rd November 2003 to 23 rd May 2004 Baseline (Year 1 B) = 24 th May 2004 to 23 rd November 2004 Baseline (Year 2 A) = 23 rd November 2004 to 23 rd May 2005 Baseline (Year 2 B) = 24 th May 2005 to 23 rd November 2005 Post Implementation (Year 3 A) = 23 rd November 2005 to 23 rd May 2006 Post Implementation (Year 3 B) = 24 th May 2006 to 23 rd November 2006							

The results of the significance tests suggest a mixed picture from the introduction of the Licensing Act. Note that these tests only suggest evidence of change and that this may or may not be directly attributable to the licensing Act. It is important to balance these findings with the results of other analysis, as described in the final report. Guildford was the only area to experience significant increases (violence against the person and calls for disorder, both in the second half of the post implementation period. In a number of areas there was some evidence of reductions for certain crime types during the post implementation period. However this was not consistent by crime type, or across the case study areas. This may suggest the changes experienced where not a direct result of the Act may be due to the differences in the ways the Act was introduced at each case study area.

3. Serious violence against the person offences

The five individual case study annexes examined violence against the person offences in detail at the macro level (entire case study area), meso level (near licensed premises) and micro level (inside or directly outside licensed premises). However, changes to the recording process of more serious violence against the person offences (for example 'threats to kill') since April 2005 may influence the results of this analysis. Additionally, lower level offences including other offences against the person (less serious violence) are likely to be influenced by police activity more so than more serious violence. For this reason the average baseline and post implementation violence against the person offences were separated into more serious and other violence against the person offences. The classification codes used for this are presented below in table 3.1, and the results of this analysis are presented in table 3.2.

Table 3.1 Offence codes used for 'serious' violence against the person offences.

1	Murder
2	Attempted murder
3	Threat or conspiracy to murder
4.1	Manslaughter
4.2	Infanticide
4.3	Child destruction
4.4/6	Causing death by dangerous or careless driving (inc. under influence)
4.7	Cause/allow death of child or vulnerable person
5	Wounding or other act endangering life
6	Endangering railway passenger
37.1	Causing death by aggravated vehicle taking

The results of this analysis (table 3.2) suggest that serious offences comprised only a small part of all violence against the person. Indeed, for all five areas they represented less than 3.5% of all violence against the person offences. As a result of this, analysis was only performed at the macro level, and only changes in annual crime counts were examined.

These results portray a mixed picture. In two of the case study areas there were small increases between the baseline average to post implementation periods (four offences in Guildford and nine in Birmingham). There were a small reductions in Blackpool (minus eight offences), and larger reductions in Croydon (-93) and Nottingham (-42). In all areas except Croydon the percentage of serious offences as a percentage of all violence against the person were relatively unchanged (a change of 0.6% or less). However in Croydon this reduced from 3.1% to 1.8%.

Table 3.3 breaks these offences down by classification code. It can be seen from this that where reductions have occurred in Croydon (-93), the majority of these were either in threat or conspiracy to murder (-74) or wounding or other act endangering life (-22). In Nottingham the reductions (-42) were also predominantly threat or conspiracy to murder (-21) or wounding or other act endangering life (-16). Overall across all five study areas there were 132 less serious offences in the post implementation period, and the majority of these (94%) were either threat or conspiracy to murder (-95) or wounding or other act endangering life (-28). It is important to note that changes in the recording of serious violence against the person offences, particularly threat or conspiracy to murder have changed and are likely to influence these reductions (see <http://www.homeoffice.gov.uk/rds/pdfs06/hosb1206.pdf>).

Table 3.2 Serious and other violence against the person crime counts (average baseline and post implementation periods)

Birmingham

	Serious violence against the person	Other violence against the person	Percentage serious (of all violence against the person offences)
Baseline average	114	3534	3.1
Post	125	3597	3.4
Percentage change	9.6	1.8	

Blackpool

	Serious violence against the person	Other violence against the person	Percentage serious (of all violence against the person offences)
Baseline average	188	5462	3.3
Post	176	5392	3.2
Percentage change	-6.4	-1.3	

Croydon

	Serious violence against the person	Other violence against the person	Percentage serious (of all violence against the person offences)
Baseline average	207	6532	3.1
Post	114	6371	1.8
Percentage change	-44.9	-2.5	

Guildford

	Serious violence against the person	Other violence against the person	Percentage serious (of all violence against the person offences)
Baseline average	40	1691	2.3
Post	44	1730	2.5
Percentage change	10.0	2.3	

Nottingham

	Serious violence against the person	Other violence against the person	Percentage serious (of all violence against the person offences)
Baseline average	233	8764	2.6
Post	191	9388	2.0
Percentage change	-18.0	6.6	

Table 3.3 Serious violence against the person by offence classification (average baseline and post implementation)

		Birmingham			Blackpool			Croydon		
Code	Description	Average baseline	Post implementation	Change	Average baseline	Post implementation	Change	Average baseline	Post implementation	Change
1	Murder	4	1	-3	3	5	2	9	7	-2
2	Attempted murder	5	4	-1	2	0	-2	1	3	2
3	Threat or conspiracy to murder	47	53	7	60	56	-4	119	45	-74
4.1	Manslaughter	1	0	-1	1	0	-1	1	0	-1
4.2	Infanticide	0	0	0	0	0	0	0	1	1
4.3	Child destruction	0	0	0	0	0	0	0	0	0
4.4/6	Causing death by dangerous or careless driving	0	0	0	0	0	0	2	1	-1
4.7	Cause/allow death of child or vulnerable person	0	0	0	0	0	0	0	0	0
5	Wounding or other act endangering life	58	67	9	123	115	-8	77	55	-22
6	Endangering railway passenger	0	0	0	0	0	0	0	1	1
37.1	Causing death by aggravated vehicle taking	0	0	0	0	0	0	0	1	1
	Total	114	125	11	188	176	-12	207	114	-93
		Guildford			Nottingham					
Code	Description	Average baseline	Post implementation	Change	Average baseline	Post implementation	Change	Sum change (pooled)		
1	Murder	2	1	-1	10	8	-2	-5		
2	Attempted murder	1	2	1	9	8	-1	-1		
3	Threat or conspiracy to murder	22	18	-4	64	43	-21	-95		
4.1	Manslaughter	1	0	-1	1	0	-1	-4		
4.2	Infanticide	0	0	0	0	0	0	1		
4.3	Child destruction	0	0	0	0	0	0	0		
4.4/6	Causing death by dangerous or careless driving	0	0	0	3	1	-2	-3		
4.7	Cause/allow death of child or vulnerable person	0	0	0	0	0	0	0		
5	Wounding or other act endangering life	15	23	9	147	131	-16	-28		
6	Endangering railway passenger	0	0	0	0	0	0	1		
37.1	Causing death by aggravated vehicle taking	0	0	0	1	0	-1	1		
	Total	40	44	4	233	191	-42	-132		

4. Weekday and weekend comparisons

In addition to the day of week and time of day analysis carried out at each case study area (see individual case study annexes) it was deemed necessary to examine crime by weekday and weekends. One of the reasons for this was that the results of this fieldwork (and that of Cragg Ross Dawson) suggested that where premises tended to extend their hours more at the weekends. Thus analysis by individual days of the week and by time of day may not be sensitive to any difference in night-time offences between weekday and weekend offences.

Two methodologies were employed here, similar to those used in the individual annexes but with an additional weekday weekend split. The first was to examine monthly crime counts (for violence against the person, criminal damage and calls for disorder) for the average baseline and post implementation periods (separated by weekday and weekend offences). The second was also to examine all these offences by time of day. For the purposes of this analysis weekends were considered as between 0.01 am Friday morning to midnight Sunday and weekday offences 0.01 Monday to midnight Thursday.

Figure 4.1 (a to e) shows the percentage change in monthly crime counts for the baseline and post implementation periods for violence against the person in each case study area, separated by weekday and weekend offences.

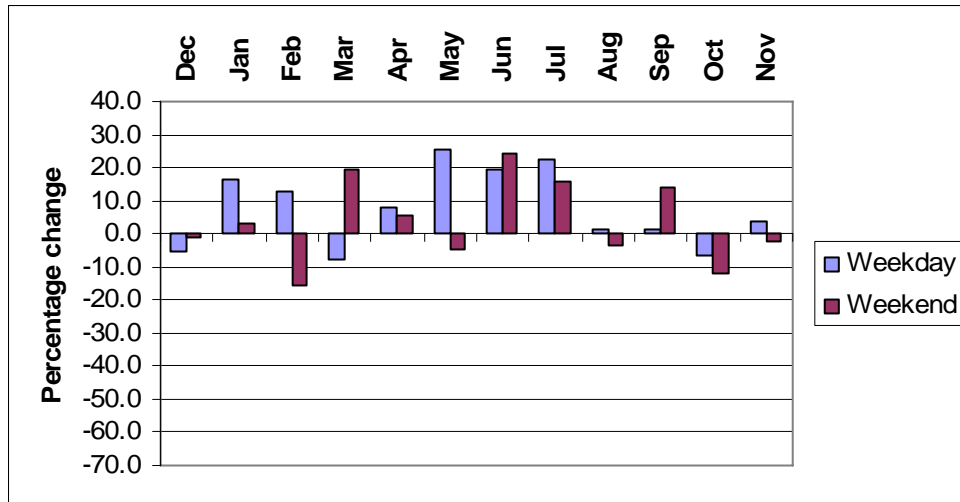
Both Birmingham and Guildford registered increases in weekday violence against the person for most of the months post implementation (10 out of 12 months in Guildford, 9 out of 12 in Birmingham). The most common combination of change, in both areas, was for increases in both weekend and weekday violence against the person, with weekday increasing the most, or for reductions in weekend violence against the person alongside increases in weekday violence against the person. Increases in violence occurred throughout the year but tended to be greater in the summer, particularly in July.

By contrast, Blackpool and Croydon saw weekday offences reduced in almost every month post implementation (11 out of 12 for Blackpool and 9 out of 12 for Croydon). In both areas, most months also showed a reduction in weekend violence against the person (11 out of 12 months for Croydon and 7 out of 12 for Blackpool). In Croydon, there were six months when both weekday and weekend violence against the person fell but weekday offences fell the most.

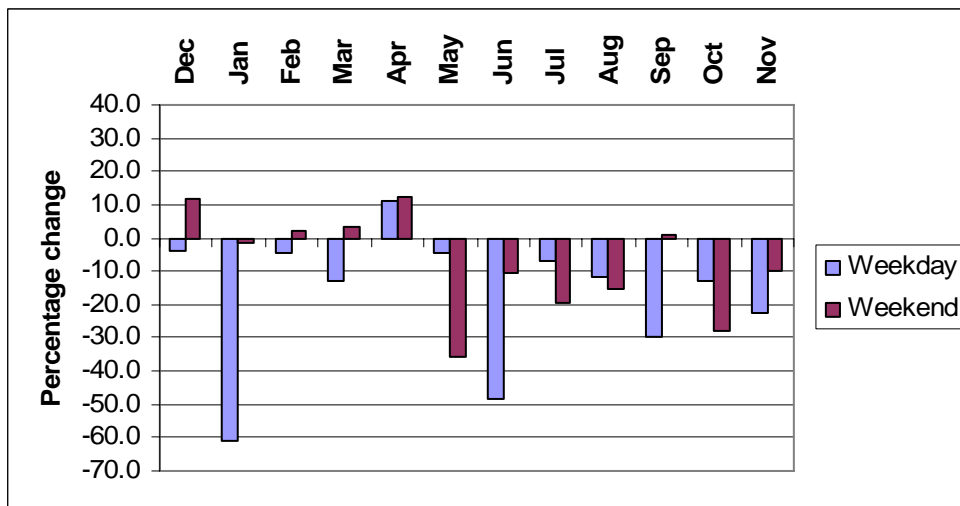
In Blackpool, there were four months of reductions in offences where weekend violence against the person fell the most and a further four months where weekday offences reduced but weekend offences increased. Increases in weekend offences in Blackpool tended to occur in the winter and early spring. It is encouraging to see a fall in all violence in Blackpool during the summer and autumn months of the post implementation period.

Figure 4.1 Percentage change in violence against the person offences by weekday and weekend (average baseline to post implementation)

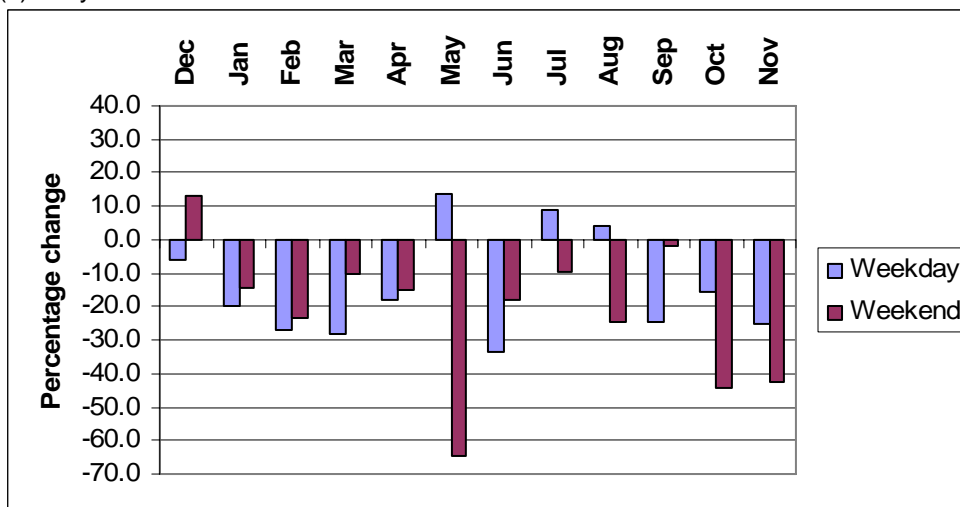
(a) Birmingham



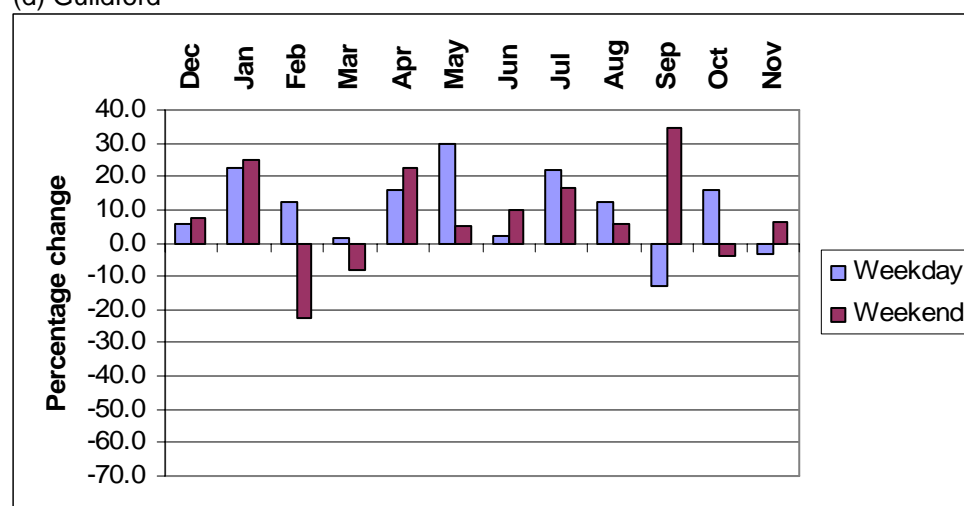
(b) Blackpool



(c) Croydon



(d) Guildford



(e) Nottingham

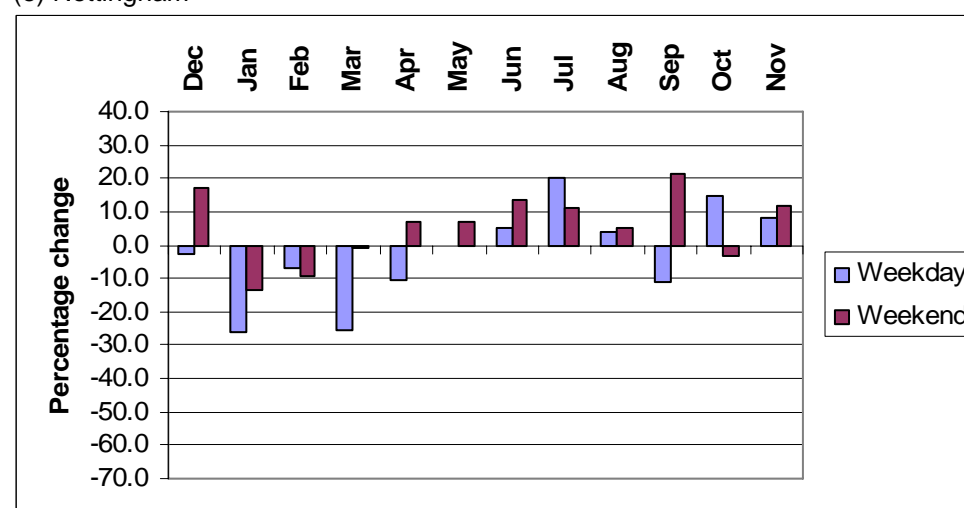


Figure 4.2 (a to e) shows the percentage change in monthly crime counts for the baseline and post implementation periods for criminal damage in each case study area, separated by weekday and weekend offences.

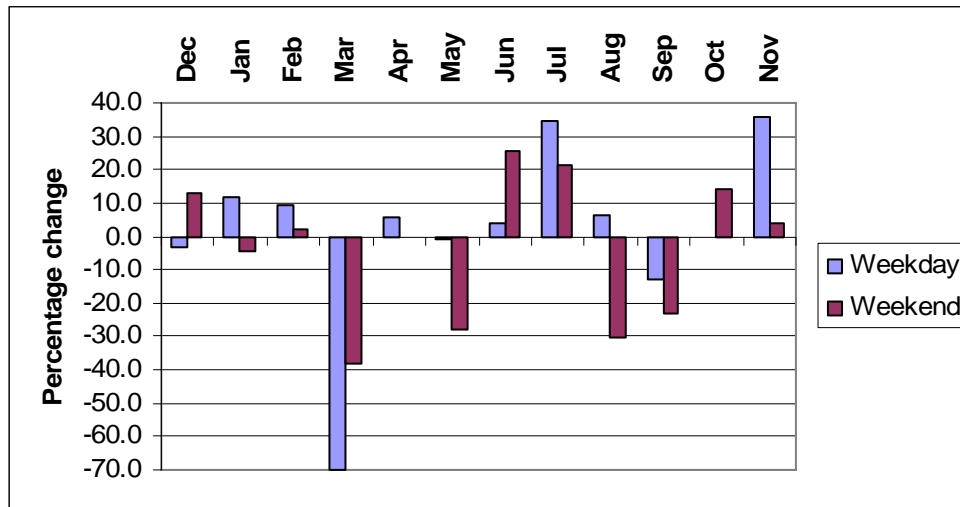
The distinctive picture of monthly changes in weekend and weekday criminal damage was the relatively large number of cases where criminal damage fell during weekdays whilst rising at weekends. Almost a third of all monthly change across the five case study sites fitted this pattern. For example, in Guildford this happened in seven out of the 12 post implementation months. It also happened in Croydon for six of the 12 post implementation months. In both areas, this occurred far more in the winter and spring and in the summer and autumn.

There were few cases, in a given month, where weekday increases in criminal damage were accompanied by even greater weekend increases in criminal damage. It was also not very common to see weekday reductions in criminal damage outstrip weekend reductions or to see weekday increases in criminal damage occur alongside weekend reductions in criminal damage.

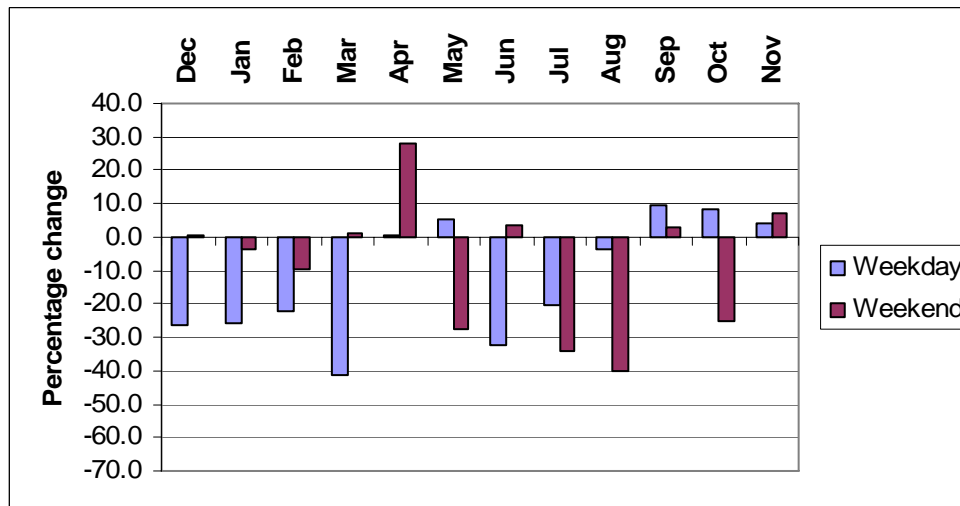
Of all the areas, Nottingham was unique because in none of the post implementation months did weekday criminal damage exceed baseline levels.

Figure 4.2 Percentage change in criminal damage offences by weekday and weekend (average baseline to post implementation)

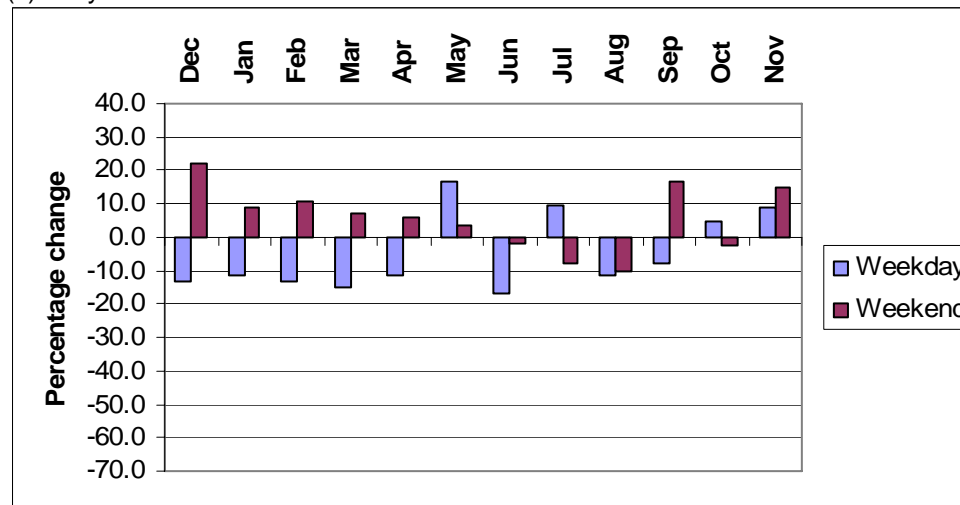
(a) Birmingham



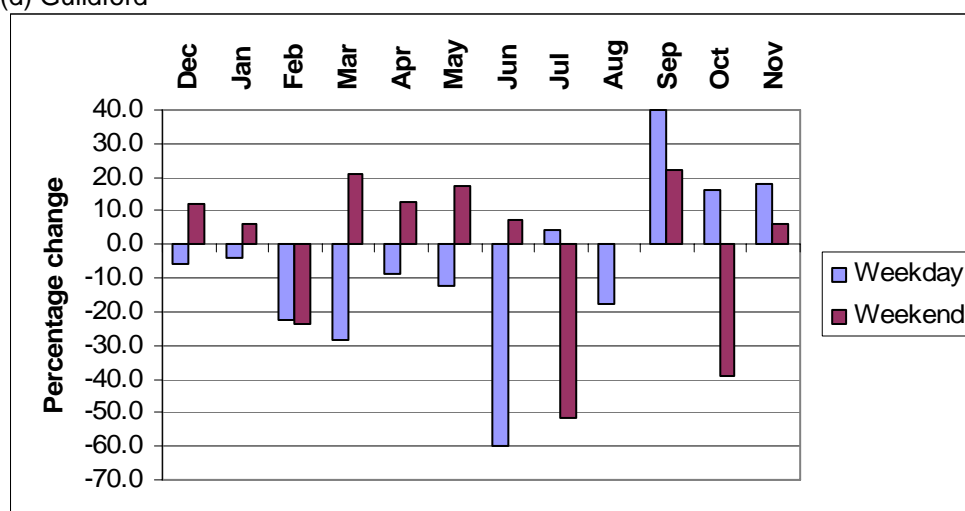
(b) Blackpool



(c) Croydon



(d) Guildford



(e) Nottingham

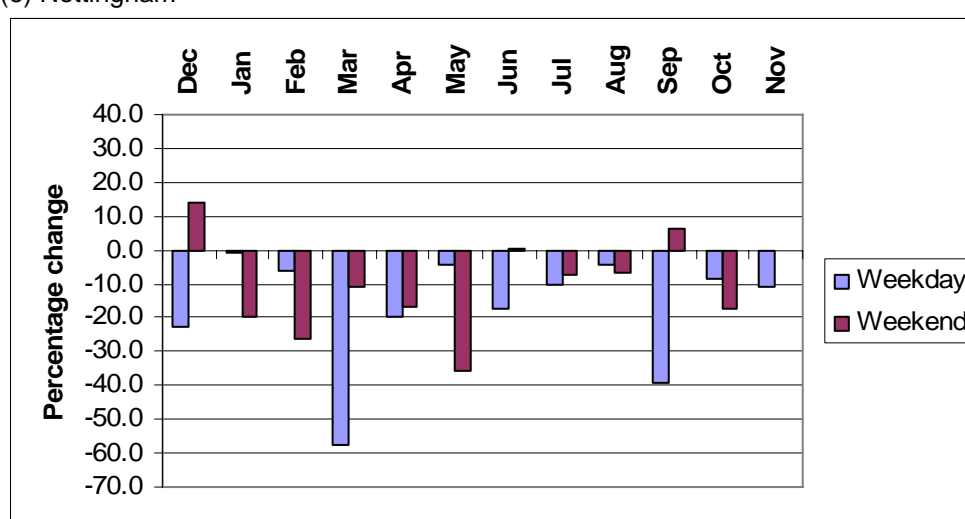


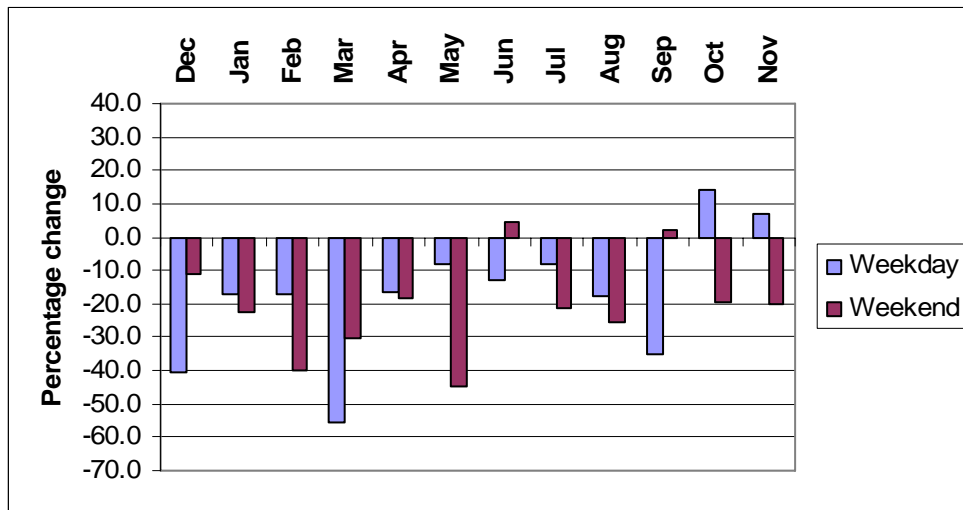
Figure 4.3 (a to e) shows the percentage change in monthly incident calls for the baseline and post implementation periods for disorder calls only in each case study area, separated by weekday and weekend offences.

All areas saw some months where week day reductions in disorder surpassed those at the weekends. There was a tendency for this to happen in the winter between December and March (see graphs for Blackpool, Croydon Guildford).

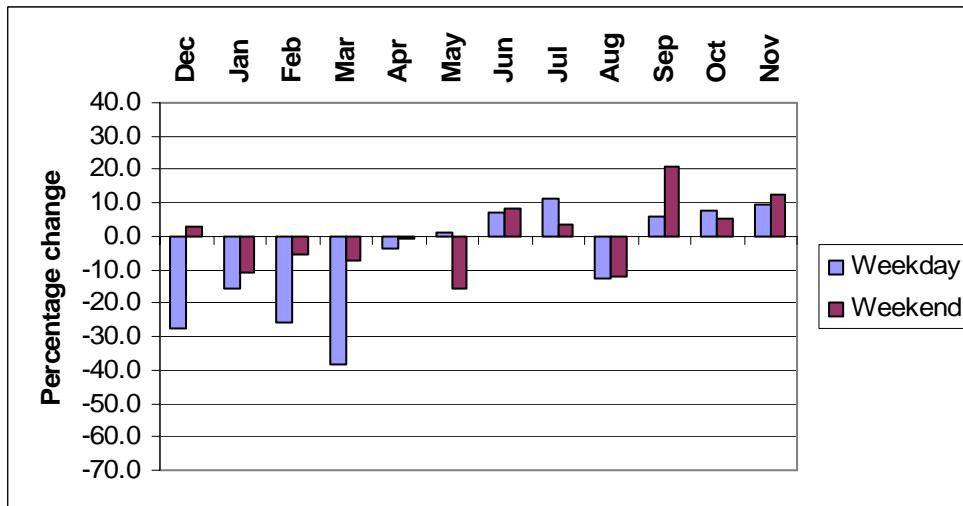
In Birmingham and Croydon the predominant picture was one of monthly reductions in disorder during the week and at weekends. Disorder at weekends was lower than in the baseline period for 10 of the 12 months in Birmingham and nine of the 12 in Croydon. A somewhat different pattern could be seen for Guildford. Here weekend and weekday disorder was higher than the baseline for seven of the 12 months post implementation. This was the only area where for five out of the 12 months the increase in disorder at weekends exceeded that during the week. This was particularly true of the spring and summer months. Increases in disorder in the summer were also evident in Nottingham and Blackpool but not elsewhere.

Figure 4.3 Percentage change in calls for disorder incidents by weekday and weekend (average baseline to post implementation)

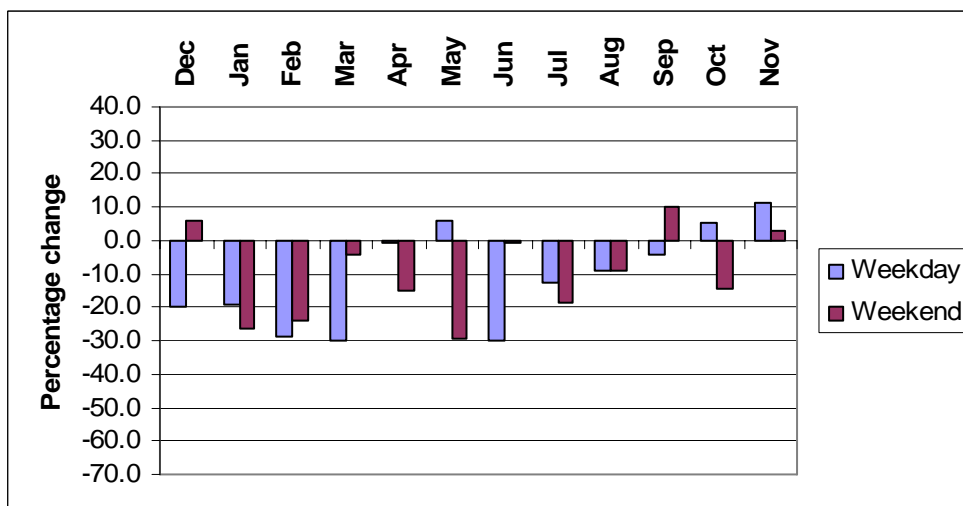
(a) Birmingham



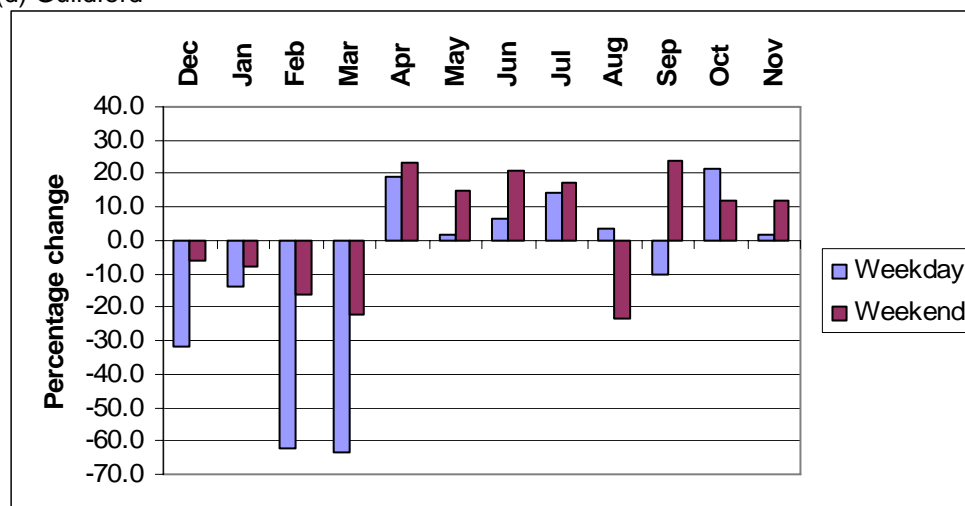
(b) Blackpool



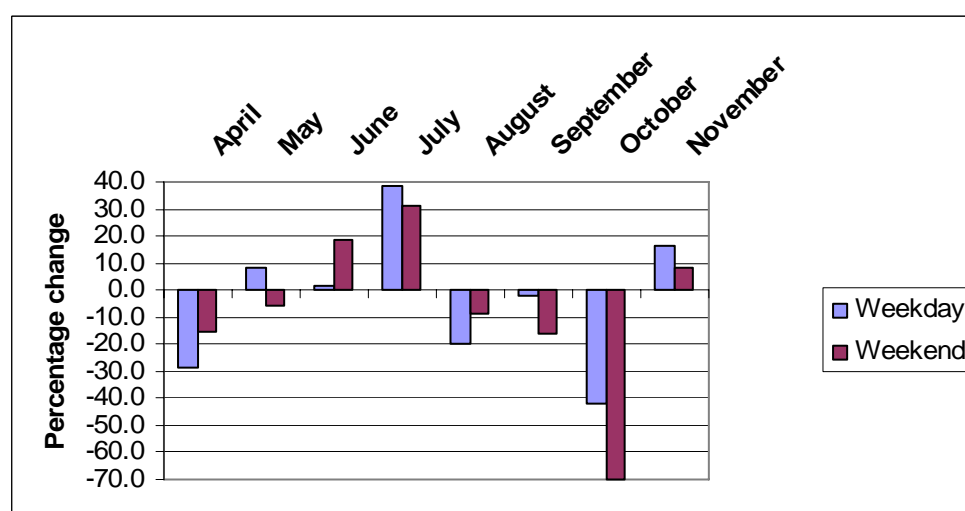
(c) Croydon



(d) Guildford



(e) Nottingham



The timing of changes in violence against the person during weekdays and at weekends are shown in Tables 4.1 to 4.5 (Birmingham, Blackpool, Croydon, Guildford and Nottingham respectively). Hourly changes are displayed as proportional changes (i.e. changes in the proportion of all violence concentrated in each hour for each area) and as changes in the absolute number of violence offences. The text here focuses on the periods 9.00pm to 4.59am as it is thought this is most likely to be affected by the Licensing Act.

Croydon saw falls in violence against the person between 11am and 3am both during the week and at weekends, although the magnitude of the change was greatest during the weekend. In Blackpool, falls were observed in violence between midnight and 3am both at weekends and on weekdays but, as in Croydon, reductions were greatest at the weekends.

In Birmingham, there was a modest reduction in violence on weekday nights between 1am and 2am and this reduction was stronger at the weekends. Violence also reduced quite markedly on weekend nights between 2am and 3am by 122 offences. This amounted to a 6.3% fall in the concentration of violence between 2am and 3am at weekends and as such was the greatest proportional shift in violence in any one-hour of any of the case study areas.

Guildford saw modest increases in violence between midnight and 1 am both on weekdays and on weekends although the increase was greater at weekends. Increases also occurred between 1am and 3am both on weekends and weekdays. The proportional changes were small and the number of additional offences modest (well below 50).

In Nottingham, there was a small reduction in violence on weekdays between midnight and 1am but a slightly larger increase in the same hourly period at weekends and between 1am and 2am. Otherwise there was little change.

Table 4.1 Proportional change and volume change of violence against the person by time of day (average baseline to post implementation) by weekday and weekend in Birmingham (police force area F1)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	30	50	23	31	1.0	0.3
1000-1059	47	52	25	37	0.0	0.5
1100-1159	69	63	37	53	-0.7	0.7
1200-1259	90	77	44	55	-1.2	0.4
1300-1359	96	84	48	48	-1.2	-0.1
1400-1459	71	103	53	46	1.5	-0.4
1500-1559	103	102	79	68	-0.6	-0.7
1600-1659	100	120	67	89	0.6	0.9
1700-1759	104	97	69	90	-0.9	0.9
1800-1859	65	85	57	91	0.8	1.5
1900-1959	69	86	65	71	0.7	0.2
2000-2059	66	74	67	81	0.1	0.5
2100-2159	53	80	85	82	1.3	-0.3
2200-2259	77	104	103	115	1.2	0.4
2300-2359	115	107	152	132	-1.0	-1.2
0000-0059	105	108	229	221	-0.3	-0.8
0100-0159	110	77	318	240	-2.5	-4.2
0200-0259	121	119	364	242	-0.7	-6.3
0300-0359	31	44	101	177	0.6	3.4
0400-0459	11	26	38	70	0.8	1.4
0500-0559	7	12	12	43	0.3	1.4
0600-0659	8	9	7	20	0.0	0.6
0700-0759	15	17	10	14	0.0	0.2
0800-0859	31	34	12	21	0.0	0.4
Total	1587	1730	2062	2137	na	na

Table 4.2 Proportional change and volume change of violence against the person by time of day (average baseline to post implementation) by weekday and weekend in Blackpool (UA)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	46	34	27	23	-0.1	0.0
1000-1059	47	31	36	28	-0.3	-0.1
1100-1159	69	46	39	34	-0.4	0.0
1200-1259	70	47	52	43	-0.4	-0.1
1300-1359	77	65	62	39	0.2	-0.5
1400-1459	83	61	73	56	-0.3	-0.3
1500-1559	163	125	96	77	-0.3	-0.2
1600-1659	120	95	104	69	0.0	-0.8
1700-1759	128	115	119	108	0.6	0.2
1800-1859	140	122	131	126	0.5	0.5
1900-1959	176	127	143	128	-0.7	0.2
2000-2059	187	159	164	134	0.5	-0.3
2100-2159	169	142	195	184	0.3	0.6
2200-2259	160	147	241	189	0.9	-0.7
2300-2359	196	181	294	272	1.2	0.7
0000-0059	286	189	409	299	-1.9	-2.0
0100-0159	142	126	314	261	0.6	-0.4
0200-0259	158	88	369	224	-1.9	-3.6
0300-0359	58	72	116	215	1.2	4.3
0400-0459	19	27	39	75	0.6	1.6
0500-0559	14	12	21	33	0.0	0.6
0600-0659	10	5	10	19	-0.1	0.4
0700-0759	11	13	14	13	0.2	0.0
0800-0859	48	34	20	13	-0.2	-0.1
Total	2570	2063	3080	2662	na	na

Table 4.3 Proportional change and volume change of violence against the person by time of day (average baseline to post implementation) by weekday and weekend in Croydon (borough)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	158	137	85	74	-0.1	0.1
1000-1059	136	101	81	64	-0.6	-0.1
1100-1159	145	108	99	72	-0.6	-0.4
1200-1259	198	166	126	121	-0.3	0.6
1300-1359	159	138	117	107	-0.1	0.4
1400-1459	192	156	124	97	-0.4	-0.2
1500-1559	277	275	169	136	1.0	-0.2
1600-1659	232	219	170	121	0.4	-0.8
1700-1759	218	197	165	129	0.1	-0.3
1800-1859	233	205	169	145	0.0	0.2
1900-1959	227	183	171	121	-0.6	-0.8
2000-2059	224	224	160	131	0.8	-0.1
2100-2159	225	192	185	152	-0.2	0.0
2200-2259	187	155	170	170	-0.3	1.1
2300-2359	183	180	229	177	0.6	-0.5
0000-0059	176	172	265	255	0.5	1.4
0100-0159	106	80	227	187	-0.4	0.0
0200-0259	62	59	184	145	0.1	-0.3
0300-0359	35	31	87	70	0.0	-0.1
0400-0459	22	18	37	35	0.0	0.2
0500-0559	16	13	25	13	0.0	-0.3
0600-0659	21	21	19	14	0.1	-0.1
0700-0759	51	47	36	25	0.1	-0.2
0800-0859	109	97	61	58	0.0	0.3
Total	3585	3174	3154	2619	na	na

Table 4.4 Proportional change and volume change of violence against the person by time of day (average baseline to post implementation) by weekday and weekend in Guildford (borough)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	21	20	14	13	-0.4	-0.2
1000-1059	14	25	16	18	1.1	0.1
1100-1159	16	18	18	16	0.0	-0.3
1200-1259	22	42	22	25	2.0	0.1
1300-1359	29	36	24	24	0.3	-0.2
1400-1459	29	16	24	24	-1.8	-0.2
1500-1559	48	56	35	35	0.2	-0.3
1600-1659	52	44	40	44	-1.6	0.1
1700-1759	62	52	33	36	-2.0	0.0
1800-1859	47	56	44	47	0.3	-0.1
1900-1959	45	55	44	30	0.4	-1.7
2000-2059	58	52	44	48	-1.5	0.0
2100-2159	59	42	62	43	-2.8	-2.4
2200-2259	59	54	78	69	-1.4	-1.6
2300-2359	69	60	129	107	-2.0	-3.3
0000-0059	64	93	126	180	2.3	4.2
0100-0159	32	49	91	103	1.4	0.4
0200-0259	29	62	53	96	3.2	3.8
0300-0359	9	17	16	34	0.8	1.6
0400-0459	3	6	9	6	0.4	-0.4
0500-0559	3	3	3	2	0.0	-0.1
0600-0659	5	2	3	2	-0.3	-0.1
0700-0759	8	6	3	4	-0.3	0.1
0800-0859	14	30	5	10	1.6	0.5
Total	790	896	931	1016	na	na

Table 4.5 Proportional change and volume change of violence against the person by time of day (average baseline to post implementation) by weekday and weekend in Nottingham (UA)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	122	92	65	63	-0.6	-0.1
1000-1059	141	130	88	68	-0.2	-0.5
1100-1159	142	154	109	104	0.3	-0.2
1200-1259	193	176	129	133	-0.3	-0.1
1300-1359	191	179	135	131	-0.2	-0.2
1400-1459	199	194	139	138	0.0	-0.2
1500-1559	297	288	179	162	-0.1	-0.6
1600-1659	257	204	177	165	-1.1	-0.5
1700-1759	257	248	218	197	-0.1	-0.7
1800-1859	278	272	218	200	0.0	-0.7
1900-1959	301	307	218	209	0.2	-0.5
2000-2059	288	293	251	271	0.2	0.1
2100-2159	289	308	258	294	0.6	0.4
2200-2259	260	280	317	363	0.6	0.5
2300-2359	258	275	421	439	0.5	-0.2
0000-0059	406	349	539	619	-1.1	1.0
0100-0159	172	185	396	467	0.4	1.0
0200-0259	148	168	382	392	0.5	-0.3
0300-0359	51	84	137	190	0.8	0.9
0400-0459	21	34	60	84	0.3	0.4
0500-0559	16	19	33	54	0.1	0.4
0600-0659	24	16	22	30	-0.2	0.1
0700-0759	37	22	33	34	-0.3	0.0
0800-0859	89	83	46	44	-0.1	-0.1
Total	4432	4360	4565	4851	na	na

The timing of changes in criminal damage during weekdays and at weekends is shown in Tables 4.6 to 4.10 (Birmingham, Blackpool, Croydon, Guildford and Nottingham respectively). The analysis technique used is the same as that for Tables 4.1 to 4.5 with violence against the person. Again the text here reflects the period 9.00pm to 04.59am as this time period is most likely to be influenced by the introduction of the licensing Act.

There was very little change in the timing of criminal damage offences in Birmingham in the post implementation period compared with the baseline with only marginal changes in the number of offences in any one-hour. In Blackpool, there was a modest reduction in criminal damage between midnight and 1am on weekdays (down 67) and a slightly greater reduction at weekends (down 94).

There was very little change in Croydon. However, there were more noticeable changes in Guildford. In the latter there was a 10.6% increase in the share of criminal damage offences occurring between midnight and 1am at the weekends (an additional 124 offences compared with the baseline). Note as stated earlier this may be due to an error in the recording of the offence time rather than an actual change. There was also an increase in criminal damage between 1am and 2am but of a much smaller magnitude. In Nottingham, there were fewer criminal damage offences between 9pm and 1am on week day nights and a fairly modest increase between 1am and 3am at weekends.

Table 4.6 Proportional change and volume change of criminal damage by time of day (average baseline to post implementation) by weekday and weekend in Birmingham (police force area F1)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	27	26	14	13	-0.4	-0.2
1000-1059	15	14	18	15	-0.3	-0.5
1100-1159	17	29	12	12	2.0	0.1
1200-1259	23	28	24	20	0.7	-0.7
1300-1359	19	19	17	12	0.0	-0.9
1400-1459	27	23	23	23	-0.8	0.1
1500-1559	29	28	23	30	-0.3	1.2
1600-1659	30	40	25	37	1.5	2.1
1700-1759	43	35	35	41	-1.7	1.1
1800-1859	43	32	39	45	-2.2	1.1
1900-1959	37	23	34	24	-2.7	-1.7
2000-2059	31	31	32	31	-0.2	-0.2
2100-2159	29	42	32	31	2.1	-0.2
2200-2259	25	27	28	35	0.2	1.2
2300-2359	32	28	39	40	-0.9	0.1
0000-0059	24	26	38	29	0.2	-1.5
0100-0159	24	20	45	34	-0.8	-1.9
0200-0259	21	23	53	38	0.2	-2.5
0300-0359	12	18	28	28	1.1	0.0
0400-0459	6	6	11	23	0.0	2.0
0500-0559	5	2	9	7	-0.5	-0.3
0600-0659	5	9	4	7	0.7	0.5
0700-0759	11	17	6	7	1.0	0.2
0800-0859	18	27	9	14	1.4	0.8
Total	550	573	594	596	na	na

Table 4.7 Proportional change and volume change of criminal damage by time of day (average baseline to post implementation) by weekday and weekend in Blackpool (UA)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	55	47	38	41	0.1	0.3
1000-1059	43	36	32	35	0.0	0.3
1100-1159	48	24	46	40	-0.7	0.0
1200-1259	71	51	74	59	-0.3	-0.2
1300-1359	55	40	58	45	-0.2	-0.2
1400-1459	73	59	76	62	-0.1	-0.2
1500-1559	112	88	102	71	-0.2	-0.7
1600-1659	124	89	130	113	-0.6	0.0
1700-1759	211	194	217	182	0.8	-0.3
1800-1859	244	222	216	199	0.8	0.4
1900-1959	220	187	203	170	0.2	-0.3
2000-2059	246	213	212	225	0.4	1.5
2100-2159	233	185	240	211	-0.4	0.0
2200-2259	243	206	294	258	0.2	0.0
2300-2359	205	201	235	240	1.3	1.3
0000-0059	268	201	330	236	-0.9	-2.0
0100-0159	97	85	159	147	0.2	0.3
0200-0259	78	57	154	119	-0.3	-0.6
0300-0359	48	33	107	99	-0.3	0.2
0400-0459	29	21	45	47	-0.1	0.3
0500-0559	13	22	28	38	0.5	0.5
0600-0659	13	12	23	13	0.1	-0.3
0700-0759	16	16	24	18	0.1	-0.1
0800-0859	49	31	32	24	-0.4	-0.1
Total	2788	2320	3071	2692	na	na

Table 4.8 Proportional change and volume change of criminal damage by time of day (average baseline to post implementation) by weekday and weekend in Croydon (borough)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	100	123	62	63	1.1	-0.1
1000-1059	85	73	55	55	-0.3	-0.1
1100-1159	82	70	53	70	-0.3	0.6
1200-1259	120	88	101	91	-1.0	-0.7
1300-1359	78	72	70	61	-0.1	-0.5
1400-1459	96	94	78	80	0.1	-0.1
1500-1559	137	138	96	106	0.3	0.2
1600-1659	140	128	114	105	-0.2	-0.6
1700-1759	171	161	171	136	-0.1	-1.9
1800-1859	254	221	193	192	-0.8	-0.5
1900-1959	191	171	161	153	-0.4	-0.7
2000-2059	199	202	158	189	0.5	0.9
2100-2159	173	188	152	166	1.0	0.2
2200-2259	201	183	161	186	-0.3	0.6
2300-2359	138	139	171	196	0.3	0.6
0000-0059	115	115	126	148	0.2	0.6
0100-0159	73	59	94	107	-0.4	0.3
0200-0259	47	34	71	78	-0.4	0.1
0300-0359	23	28	58	58	0.2	-0.1
0400-0459	20	16	26	35	-0.1	0.3
0500-0559	12	21	20	28	0.4	0.3
0600-0659	22	19	19	18	-0.1	-0.1
0700-0759	45	47	21	31	0.2	0.4
0800-0859	91	87	46	59	0.0	0.4
Total	2607	2477	2272	2411	na	na

Table 4.9 Proportional change and volume change of criminal damage by time of day (average baseline to post implementation) by weekday and weekend in Guildford (borough)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	30	23	17	22	-0.6	0.3
1000-1059	13	15	23	17	0.2	-0.7
1100-1159	18	13	18	9	-0.5	-0.9
1200-1259	34	21	29	24	-1.2	-0.6
1300-1359	21	17	20	24	-0.3	0.2
1400-1459	21	21	27	29	0.1	0.0
1500-1559	46	28	47	40	-1.6	-1.0
1600-1659	63	54	52	42	-0.8	-1.2
1700-1759	80	79	74	68	0.1	-1.0
1800-1859	121	101	109	100	-1.7	-1.5
1900-1959	102	91	88	77	-0.8	-1.6
2000-2059	87	83	81	89	-0.2	0.2
2100-2159	68	65	74	69	-0.2	-1.0
2200-2259	86	63	96	78	-2.1	-2.2
2300-2359	86	67	91	75	-1.6	-2.0
0000-0059	75	146	68	191	7.1	10.6
0100-0159	21	29	42	70	0.9	2.2
0200-0259	18	42	33	33	2.4	-0.2
0300-0359	10	10	13	21	0.1	0.7
0400-0459	8	4	7	8	-0.3	0.0
0500-0559	4	6	6	6	0.2	0.0
0600-0659	7	7	5	6	0.0	0.1
0700-0759	14	15	10	7	0.1	-0.3
0800-0859	27	32	14	15	0.6	0.0
Total	1053	1032	1039	1120	na	na

Table 4.10 Proportional change and volume change of criminal damage by time of day (average baseline to post implementation) by weekday and weekend in Nottingham (UA)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	238	201	161	123	-0.1	-0.4
1000-1059	150	140	115	105	0.2	0.0
1100-1159	153	128	116	120	0.0	0.3
1200-1259	218	187	217	189	0.0	-0.2
1300-1359	215	169	161	143	-0.3	-0.1
1400-1459	224	220	199	164	0.5	-0.3
1500-1559	291	193	218	213	-1.0	0.3
1600-1659	336	249	273	238	-0.7	-0.2
1700-1759	505	396	409	344	-0.6	-0.5
1800-1859	567	505	459	375	0.3	-0.8
1900-1959	587	473	445	350	-0.5	-1.0
2000-2059	625	494	503	409	-0.7	-0.9
2100-2159	514	425	439	403	-0.3	0.0
2200-2259	524	465	467	422	0.3	-0.1
2300-2359	375	340	455	374	0.3	-0.8
0000-0059	503	440	473	495	0.2	1.2
0100-0159	157	146	230	257	0.2	0.9
0200-0259	124	114	174	191	0.1	0.6
0300-0359	83	97	112	162	0.4	1.1
0400-0459	42	54	62	90	0.3	0.6
0500-0559	36	34	45	56	0.1	0.3
0600-0659	40	40	27	35	0.1	0.2
0700-0759	80	86	52	36	0.3	-0.2
0800-0859	172	193	99	99	0.8	0.2
Total	6753	5789	5906	5393	na	na

The concentration and volume of disorder calls at weekends and during the week by hour of the night are displayed in Tables 4.11 to 4.15 (Birmingham, Blackpool, Croydon, Guildford and Nottingham respectively). Again the text here reflects the period 9.00pm to 04.59am as this time period is most likely to be influenced by the introduction of the licensing Act.

In Nottingham, there was virtually no change in the timing of disorder incidents either during the week or at weekends. In Blackpool and Croydon there were some modest reductions in disorder at night. In Blackpool these occurred between midnight and 3am on both weekdays and at weekends but were greater at weekends. In Croydon, there were reductions in disorder on weekdays between 11pm and 3am and greater ones at weekends particularly between 1am and 2am.

The greatest change in any area was in Guildford which registered a sizable increase in the number of disorder calls between midnight and 1am both during the week (6.3% more calls than in the baseline) and particularly so at weekends (6.5% more calls than in the baseline, Table 4.20). Note again this may be subject to a recording error as previously acknowledged.

By contrast, the situation in Birmingham was one of falling levels of disorder throughout the night both during the week and at weekends. There was a sizeable reduction between 11pm and midnight and between 1am to 2am but the greatest fall occurred between 2am and 3am at weekends during which there were three per cent fewer calls compared with the baseline.

Table 4.11 Proportional change and volume change of calls for disorder by time of day (average baseline to post implementation) by weekday and weekend in Birmingham (police force area F1)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	88	69	47	57	-0.2	0.4
1000-1059	123	106	70	65	0.1	0.2
1100-1159	166	146	95	89	0.1	0.2
1200-1259	182	181	128	129	0.7	0.5
1300-1359	238	160	151	128	-1.1	0.1
1400-1459	231	199	168	118	0.1	-0.5
1500-1559	272	200	205	158	-0.8	-0.3
1600-1659	290	280	198	190	0.9	0.6
1700-1759	266	236	229	157	0.3	-0.8
1800-1859	249	220	207	177	0.2	0.1
1900-1959	229	177	214	172	-0.5	-0.1
2000-2059	239	207	228	190	0.1	0.0
2100-2159	208	197	241	184	0.5	-0.4
2200-2259	239	198	279	217	-0.1	-0.3
2300-2359	289	202	374	239	-1.1	-1.7
0000-0059	262	238	443	378	0.4	0.2
0100-0159	279	207	552	382	-0.8	-1.8
0200-0259	311	228	719	468	-0.9	-3.0
0300-0359	111	119	348	345	0.7	1.3
0400-0459	53	66	125	236	0.6	3.1
0500-0559	26	34	70	99	0.3	0.9
0600-0659	27	27	45	77	0.1	0.9
0700-0759	29	30	39	31	0.1	0.0
0800-0859	50	57	36	43	0.4	0.3
Total	4453	3784	5206	4329	na	na

Table 4.12 Proportional change and volume change of calls for disorder by time of day (average baseline to post implementation) by weekday and weekend in Blackpool (UA)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	178	155	129	113	-0.1	-0.2
1000-1059	197	203	167	158	0.2	-0.1
1100-1159	238	227	192	204	0.0	0.1
1200-1259	283	277	239	253	0.1	0.1
1300-1359	345	302	316	271	-0.3	-0.5
1400-1459	394	349	330	301	-0.3	-0.3
1500-1559	464	446	409	378	0.0	-0.3
1600-1659	558	524	465	421	-0.1	-0.4
1700-1759	698	695	555	507	0.3	-0.5
1800-1859	843	847	643	676	0.5	0.3
1900-1959	1062	940	798	792	-0.7	-0.1
2000-2059	1051	979	912	922	-0.2	0.0
2100-2159	836	808	843	911	0.1	0.6
2200-2259	637	615	787	840	0.1	0.4
2300-2359	539	535	737	784	0.2	0.4
0000-0059	485	463	777	748	0.0	-0.3
0100-0159	386	319	720	669	-0.5	-0.5
0200-0259	388	324	704	603	-0.5	-1.0
0300-0359	153	220	360	470	0.8	1.0
0400-0459	83	115	175	270	0.4	0.9
0500-0559	46	53	87	121	0.1	0.3
0600-0659	40	36	49	65	0.0	0.2
0700-0759	51	46	55	42	0.0	-0.1
0800-0859	101	89	74	90	-0.1	0.1
Total	10049	9567	129	113	na	na

Table 4.13 Proportional change and volume change of calls for disorder by time of day (average baseline to post implementation) by weekday and weekend in Croydon (borough)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	150	148	109	107	0.5	0.4
1000-1059	185	154	147	105	0.0	-0.3
1100-1159	209	171	180	140	0.0	-0.1
1200-1259	260	192	200	161	-0.4	0.0
1300-1359	278	255	220	180	0.5	0.0
1400-1459	325	283	242	206	0.3	0.2
1500-1559	458	353	302	227	-0.5	-0.4
1600-1659	460	363	324	266	-0.3	0.0
1700-1759	454	386	333	290	0.2	0.4
1800-1859	502	352	350	272	-1.2	-0.3
1900-1959	459	375	386	297	-0.1	-0.4
2000-2059	473	411	415	329	0.4	-0.2
2100-2159	439	375	424	297	0.3	-1.0
2200-2259	392	276	382	349	-0.9	0.8
2300-2359	379	293	438	345	-0.4	-0.3
0000-0059	245	233	409	384	0.6	1.0
0100-0159	176	160	356	243	0.3	-1.0
0200-0259	118	107	346	287	0.2	0.1
0300-0359	66	64	168	137	0.2	0.0
0400-0459	30	39	74	79	0.3	0.4
0500-0559	30	25	41	38	0.0	0.1
0600-0659	32	22	35	33	-0.1	0.1
0700-0759	71	49	39	51	-0.2	0.4
0800-0859	133	118	83	77	0.5	0.4
Total	6318	5204	5996	4900	na	na

Table 4.14 Proportional change and volume change of calls for disorder by time of day (average baseline to post implementation) by weekday and weekend in Guildford (borough)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	43	31	34	33	-0.4	-0.1
1000-1059	55	35	38	40	-0.7	0.0
1100-1159	58	53	46	34	-0.1	-0.5
1200-1259	75	56	55	61	-0.6	0.1
1300-1359	88	71	83	83	-0.5	-0.2
1400-1459	97	91	75	80	0.0	0.0
1500-1559	111	99	97	82	-0.2	-0.8
1600-1659	131	107	115	103	-0.7	-0.7
1700-1759	170	155	133	128	-0.3	-0.5
1800-1859	226	195	127	157	-0.8	0.8
1900-1959	250	205	168	161	-1.3	-0.7
2000-2059	268	248	190	161	-0.2	-1.5
2100-2159	206	215	245	224	0.9	-1.4
2200-2259	172	158	232	230	-0.2	-0.6
2300-2359	163	127	238	248	-1.2	-0.2
0000-0059	115	255	219	407	6.3	6.5
0100-0159	72	72	174	164	0.2	-0.8
0200-0259	69	66	117	120	0.0	-0.2
0300-0359	28	30	54	79	0.2	0.8
0400-0459	12	9	29	30	-0.1	0.0
0500-0559	8	6	12	13	-0.1	0.0
0600-0659	7	9	9	5	0.1	-0.2
0700-0759	13	6	6	9	-0.3	0.1
0800-0859	23	22	17	18	0.0	0.0
Total	2453	2321	2508	2670	na	na

Table 4.15 Proportional change and volume change of calls for disorder by time of day (average baseline to post implementation) by weekday and weekend in Nottingham (UA)

Time of day	Weekday baseline average	Weekday post	Weekend baseline average	Weekend post	Weekday proportional change	Weekend proportional change
0900-0959	25	33	20	24	0.6	0.4
1000-1059	39	49	26	26	0.8	0.1
1100-1159	52	50	42	34	0.0	-0.4
1200-1259	65	63	52	35	0.1	-0.9
1300-1359	53	54	43	48	0.2	0.5
1400-1459	55	83	54	46	2.1	-0.3
1500-1559	75	81	61	62	0.7	0.3
1600-1659	89	69	62	59	-1.1	0.1
1700-1759	95	98	97	66	0.5	-1.6
1800-1859	128	104	78	74	-1.3	0.1
1900-1959	150	131	121	128	-0.8	1.0
2000-2059	170	143	131	131	-1.3	0.6
2100-2159	126	106	128	113	-1.0	-0.4
2200-2259	113	117	156	143	0.6	-0.2
2300-2359	93	98	160	128	0.6	-1.4
0000-0059	64	56	127	123	-0.4	0.3
0100-0159	43	25	78	95	-1.1	1.5
0200-0259	25	22	77	67	-0.1	-0.3
0300-0359	12	17	43	34	0.4	-0.4
0400-0459	5	7	14	26	0.2	0.9
0500-0559	8	10	17	10	0.2	-0.4
0600-0659	7	3	5	7	-0.3	0.2
0700-0759	3	6	6	9	0.2	0.2
0800-0859	15	17	5	11	0.2	0.4
Total	1510	1442	1603	1499	na	na

These changes should not be considered in isolation, and their implications are discussed further in the final report.

5. Synthesis Maps

In order to examine change between baseline and post implementation time periods, the kernel density estimate (KDE) hot spot maps produced in the individual annexes for violence against the person and criminal damage were used to produce synthesis maps. For more detail on the construction of KDE hot spot maps see the technical annex. The advantages of these synthesis maps are that changes in the spatial and temporal distributions of crime patterns can be examined at a glance on a single map.

In the individual annexes two KDE maps were produced (one for the average baseline and one for the post implementation periods) for each of the four time categories under consideration. These time periods were:

- 9.00pm to 10.59pm
- 11.00pm to 0.59am
- 1.00am to 2.59am
- 3.00am to 4.59am

In this annex, the two maps (baseline and post implementation) for each time group have been combined to give a map of change for each time period. This was created by subtracting the KDE (z score) for each grid cell in the average baseline period from the KDE score in the post implementation period to give a KDE (Z value) change for each cell. These values of change (based on the change from the two z values) were then categorised into five groups. These were;

- high increase
- increase
- little or no change
- reduction
- high reduction

Note that these categories are comparable only for each crime type under consideration, and only for individual areas. Thus the change depicted is relative to that area and that crime type. It is not possible using these scales to compare a high increase in criminal damage from 3.00am to 4.59am in Birmingham with a high increase in criminal damage at the same time period in Blackpool. However, the synthesis maps do indicate change in violence against the person from 1.00am to 2.59am in Nottingham with change in violence against the person from 3.00am to 4.59am in Nottingham. In other words, like crime categories within individual case study areas can be compared, to examine changes both in time and place, but criminal damage can not be compared with violence against the person, and Nottingham can not be compared with Birmingham in the scale of high increase to high reduction.

Figure 5.1 examines the change in spatio-temporal patterns of violence against the person in the baseline and post implementation periods from 9.00pm through to 4.59am. Figures 5.2 through 5.5 depict these maps for Blackpool, Croydon, Guildford and Nottingham respectively.

In Birmingham there was little change in the location of violence against the person hot spots between 9.00pm and 0.59am, although there were some increases near the cathedral and south of Broad Street from 9.00pm to 10.59pm. There were also some increases to the south of Hurst Street and the east of the cathedral from 11.00pm to 0.59am. There was also a reduction at this time in the Five-ways area. The most pronounced changes were from 1.00am to 2.59am, with reductions in a number of areas, including Hurst Street and Broad Street. Many of the reductions in the southern half of the area coincide with the location of licensed premises. Hurst Street and Five-ways experience noticeable reductions, although there was an increase adjacent to Five-ways. Between 3.00am and 4.59am there were five areas that experienced an increase in violence, including Broad Street, Hurst Street, and Five-ways. It is noticeable that these reductions from 1.00am to 2.59am, and subsequent

increases between 3.00am and 4.59am correspond with the findings of the proportional analysis in the Birmingham annex, particularly when considering the cluster area (with a high concentration of premises) and within 50m of premises. Moreover, the location of a number of the premises in the top 15 premises post implementation also coincide with areas with an increase in hot spots of violence against the person offence between 3.00am and 4.59am.

In Blackpool there were few changes between 9.00pm and 10.59pm, and some reductions between 11.00pm and 0.59am near Blackpool Tower and just to the East of the town centre area. From 1.00am to 2.59am there were a number of areas with reductions, that coincide with the location of licensed premises, and in particular near Blackpool tower, just to the East of the town centre, and towards Market Street. At Queen Street there was an increase at that time. From 3.00am to 4.59am there were a number of increases in violence against the person hot spots, and these were focussed around the main drinking areas between Market Street and Queen Street. Again this coincides with the findings in the Blackpool Annex that show proportional reductions in crime between 1.00am and 2.59am, and increases between 3.00am and 4.59am, that are greatest in the vicinity of licensed premises. A number of the premises in the Top 15 for violence against the person in the post implementation period are also situated in the main drinking areas with increased hot spots of violence.

In Croydon there was a mixed picture of change between 9.00pm and 11.00pm, with some smaller reductions and increases across the borough, although there was no consistent pattern. However there was an area with an increase in violence against the person, between New Addington, Addington and Forresdale. Increases here continued though to 4.59am although this increase was lowest between 3.00am and 4.59am. From 11.00pm to 1.59am, with the exception of the Addington, New Addington, Forresdale area, there were predominantly reductions that on the whole corresponded with the location of licensed premises. Between 1.00am and 2.59am these decreases were greatest in the High Street and George Street. Again with the exception of the Forresdale, Addington New Addington area, between 3.00am and 4.59am there were again reductions, although at a reduced rate to the previous two hours. These reductions between 1.00am and 2.59am are consistent with the findings in the Croydon Annex showing reductions at these time periods that are greatest in areas near to licensed premises. Croydon is the only case study area without increases in the key drinking areas between 3.00am and 4.59am. This may reflect the policy of the area in granting licenses after 2.00am. A number of the top 15 post implementation fall within this area of reduced hot spots of violence. Again this is unusual, although in Croydon a number of premises that were in the baseline top 15 were closed for all or part of the post period, or had closed down. Thus, overall there appears to have been reductions to violence against the person offences in Croydon town centre.

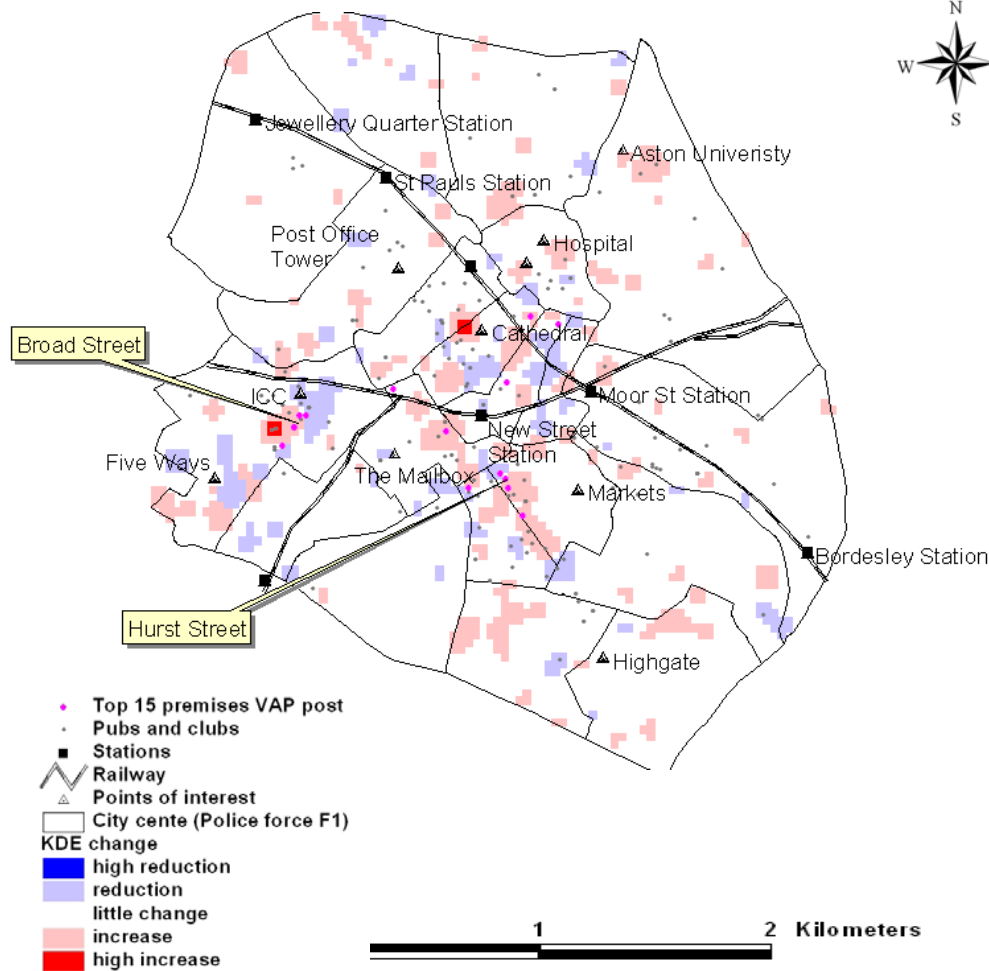
In Guildford the hot spot change maps show on the whole there are reductions in violence against the person hot spots between 9.00pm and 10.59pm. From 11.00pm to 0.59am these reductions continue, especially in the town centre, and most concentrated in Bridge Street, High Street and North Street. There were some increases to the north of the city. From 1.00am to 0.59am this picture changed, with increases in the town centre focussed around the key drinking areas. From 3.00am to 0.49am these increases continued although at a reduced rate. The majority of premises in the top 15 premises for violence against the person offences are also situated in areas with increases in violence against person hot spots from 11pm to 3am. The time of day analysis in the Guildford annex showed increases 9 till midnight, and increases from midnight till 0.59am and from 2.00am to 2.59am, with these changes at a greater magnitude in areas near to licensed premises. Note this is generally consistent with the hot spot maps. However the time of day analysis shows reductions from 11.00pm to 11.59pm and increases from midnight to 0.59am. The hot spot maps suggest a mixed picture of increases and decreases in and around the town centre at this time.

In Nottingham, from 9.00pm to 10.59pm there was a mixed picture, although there were some increases in violence against the person hot spot offences around the city centre area. From 11.00pm to 2.59 there was a mixed picture with reductions around Market Square area and to the west of it. There were however increases around the Lace market area and to the east of it. From 3.00am to 4.59pm there was a change in the patterns of hot spots with increases in the city centre that were most concentrated in Market Square and Lace Market. The top 15

premises for violence against the person in the post implementation period were all concentrated around this area also. It is important to note that some of these premises were situated near the Market Square area which experienced reductions in violence hot spots from 11.00pm to 1.59am. On the whole, the trends found correspond with the time of day analysis in the Nottingham appendix, which showed reductions from 2.00am to 2.59am, and increases from 3.00am and 3.59am, concentrated near licensed premises. However the time of day analysis did not pick out the increases that occurred between 11.00pm and 1.59am around the Lace Market area and to the east of it.

Figure 5.1 Average baseline to post implementation KDE synthesis change maps for Birmingham (police force area F1) violence against the person

(a) 9.00pm to 10.59pm



(b) 11.00pm to 0.59am

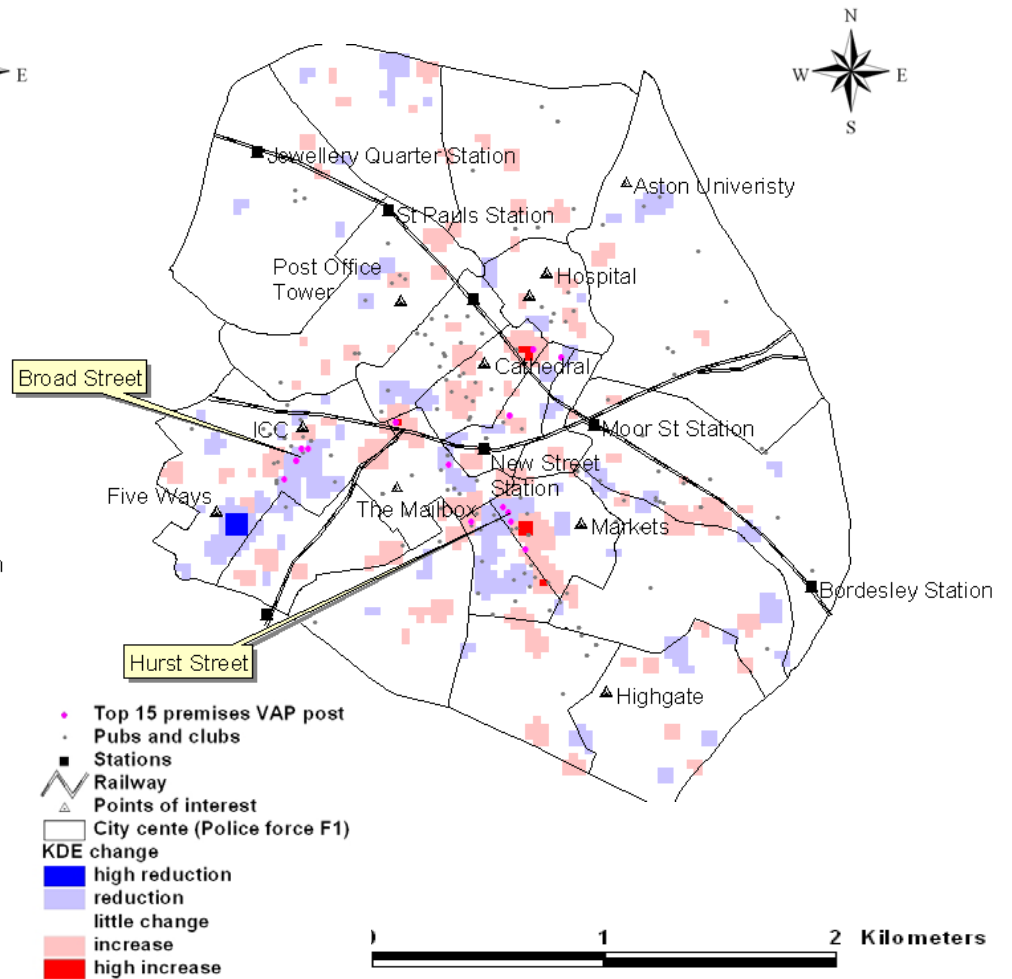
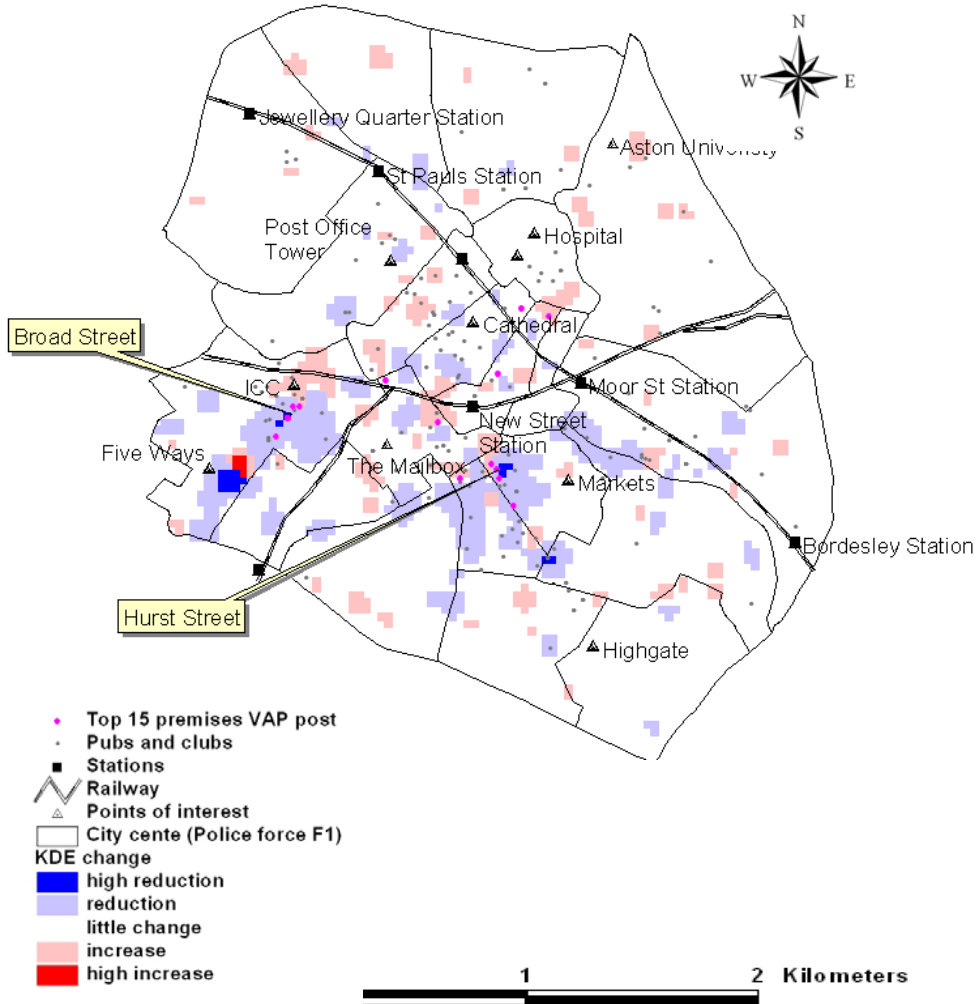


Figure 5.1 Average baseline to post implementation KDE synthesis change maps for Birmingham (police force area F1) for violence against the person

(c) 1.00am to 2.59am



(d) 3.00am to 4.59am

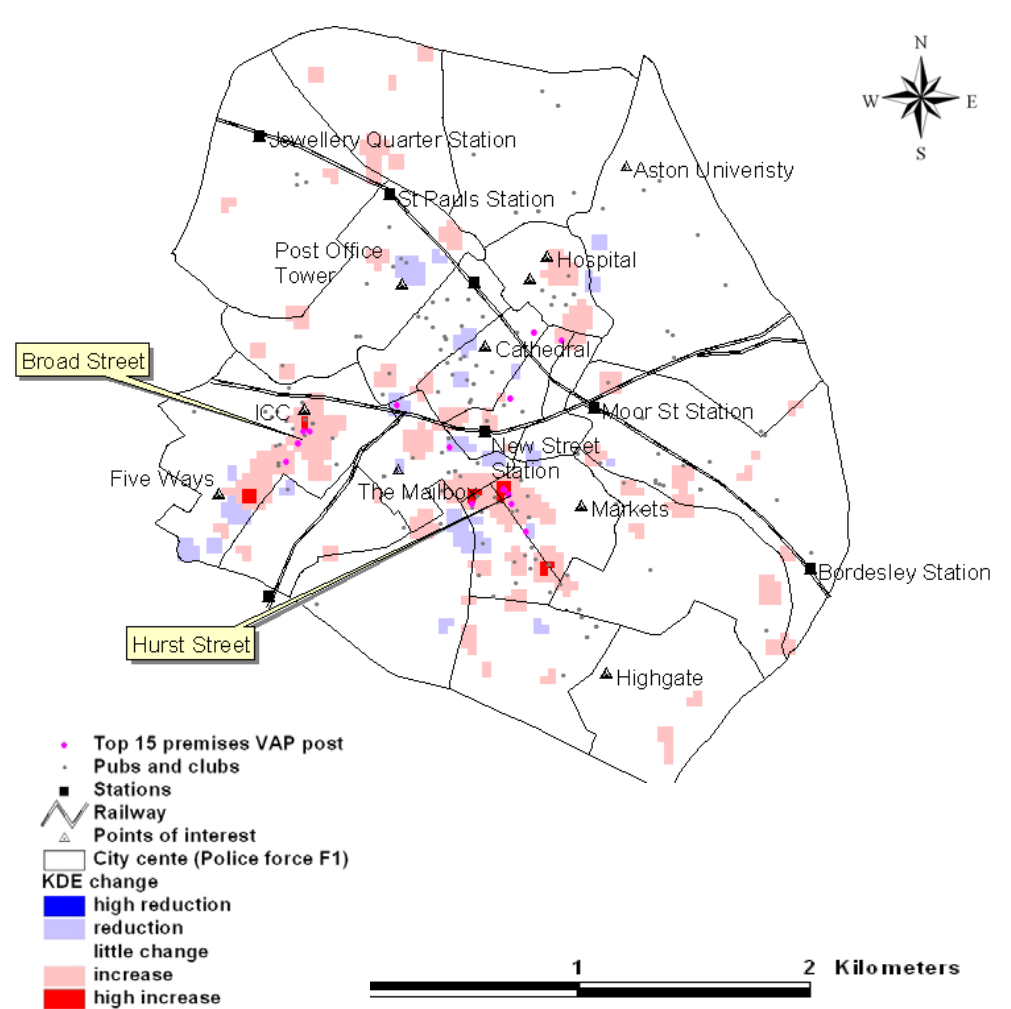
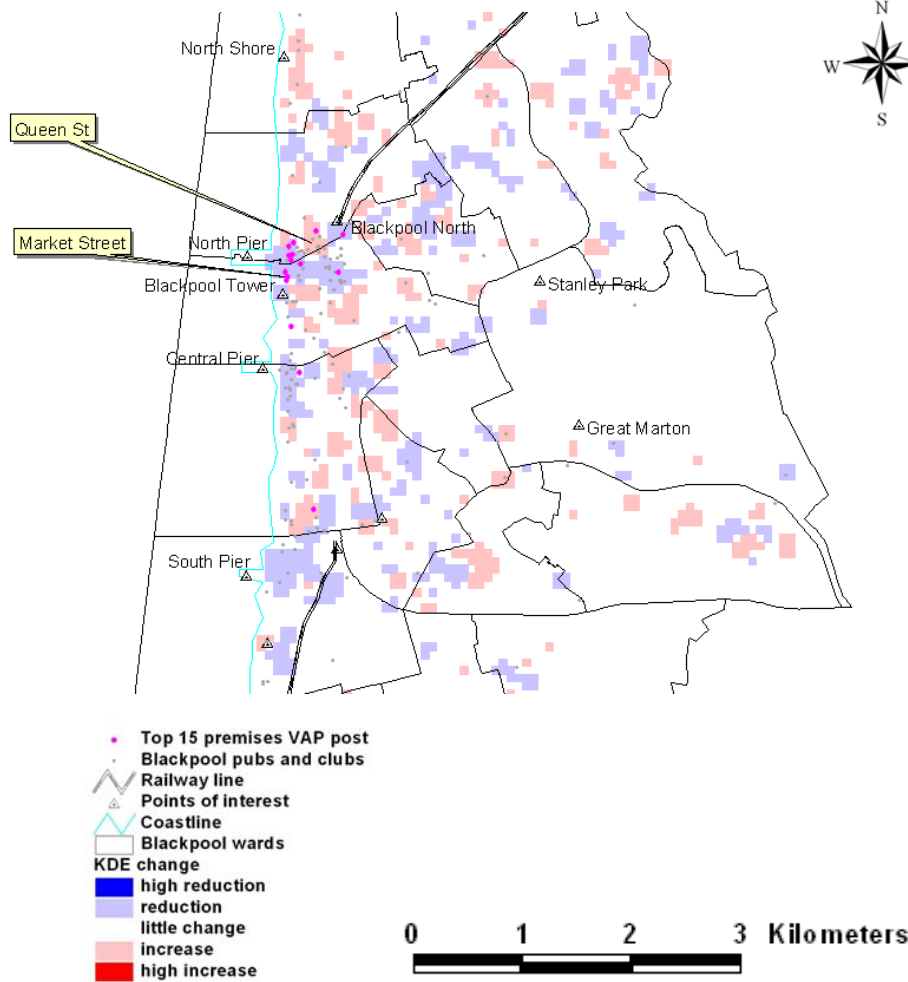


Figure 5.2 Average baseline to post implementation KDE synthesis change maps for Blackpool (UA) for violence against the person

(a) 9.00pm to 10.59pm



(b) 11.00pm to 0.59am

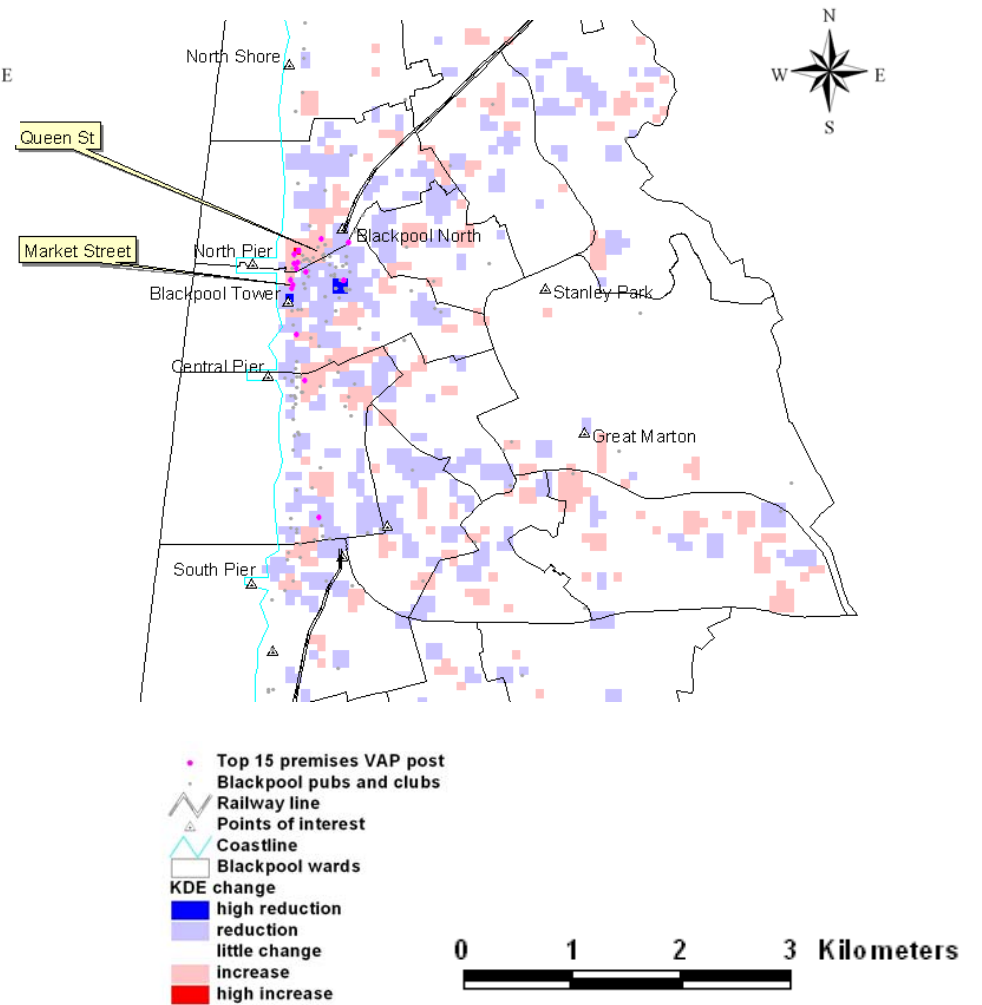
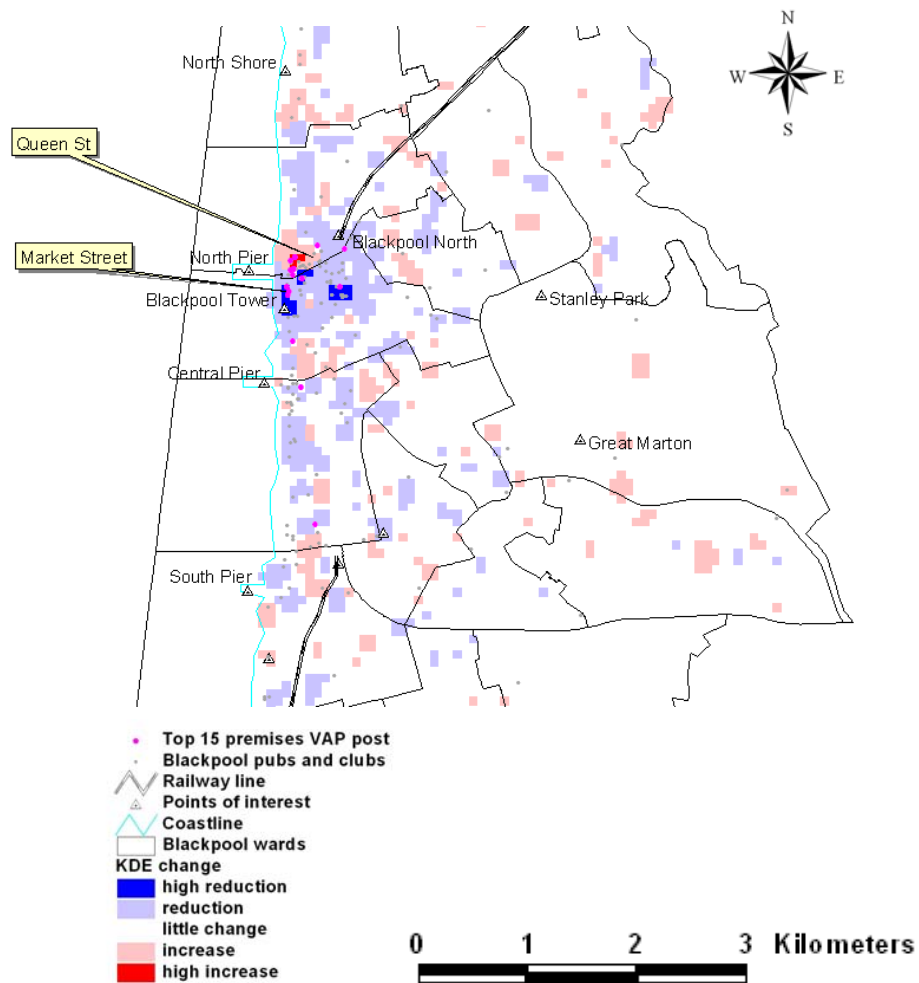


Figure 5.2 Average baseline to post implementation KDE synthesis change maps for Blackpool (UA) for violence against the person

(c) 1.00am to 2.59am



(d) 3.00am to 4.59am

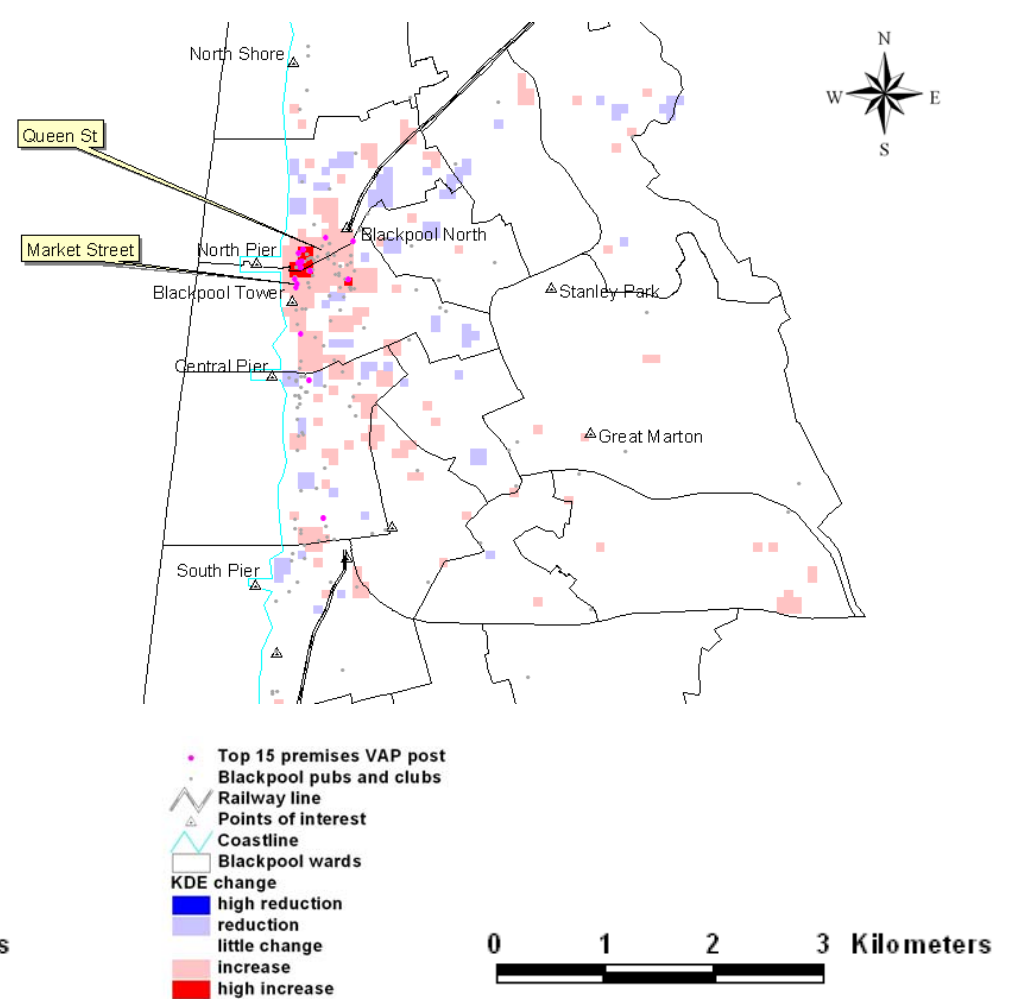
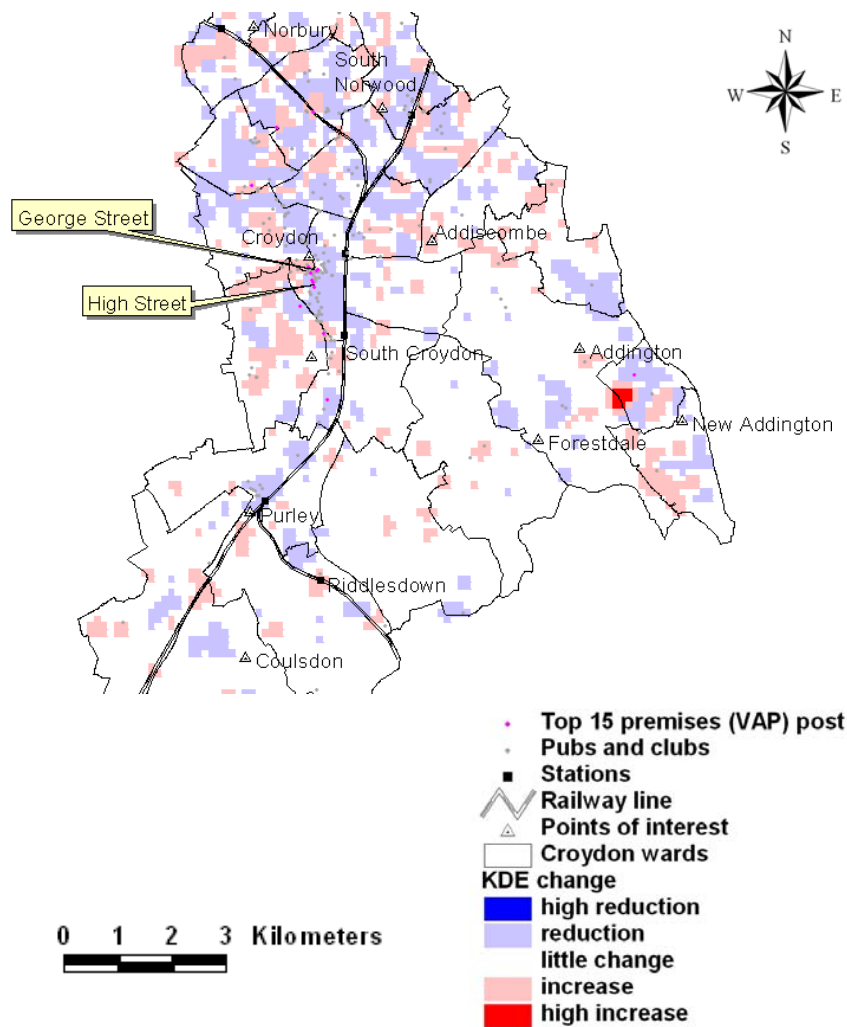


Figure 5.3 Average baseline to post implementation KDE synthesis change maps for Croydon (borough) for violence against the person

(a) 9.00pm to 10.59pm



(b) 11.00pm to 0.59am

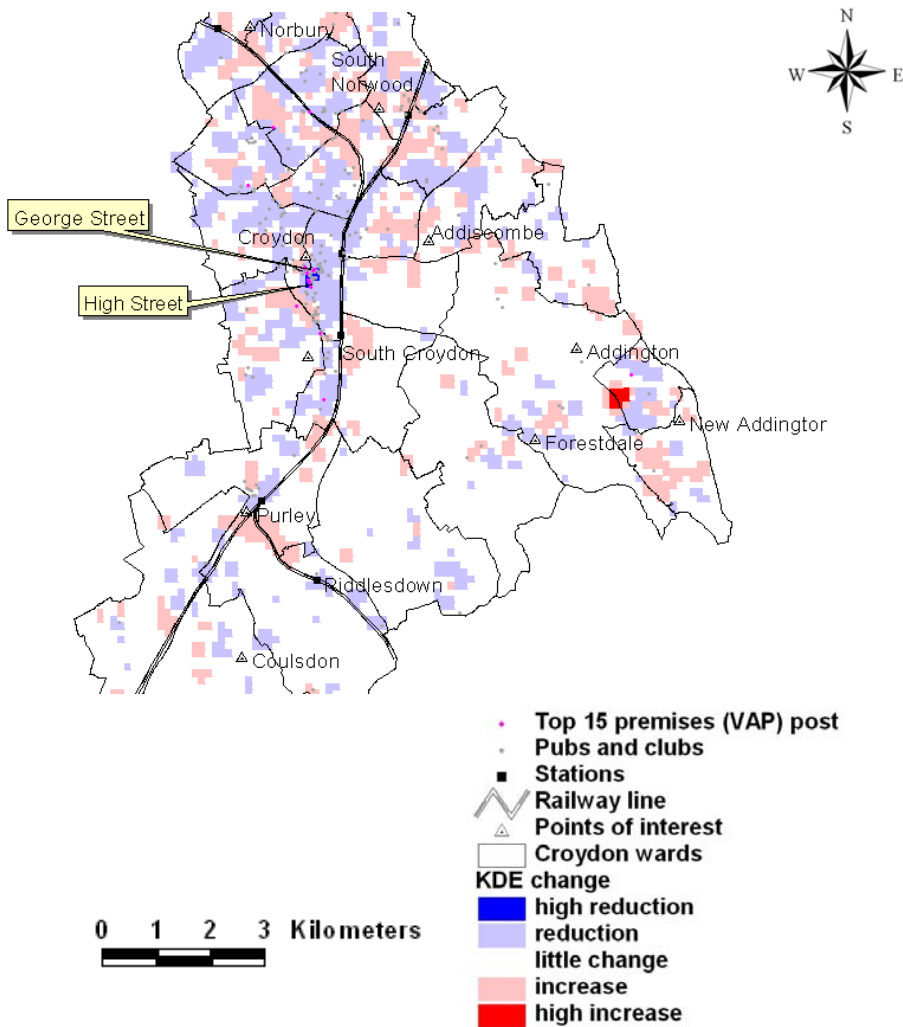
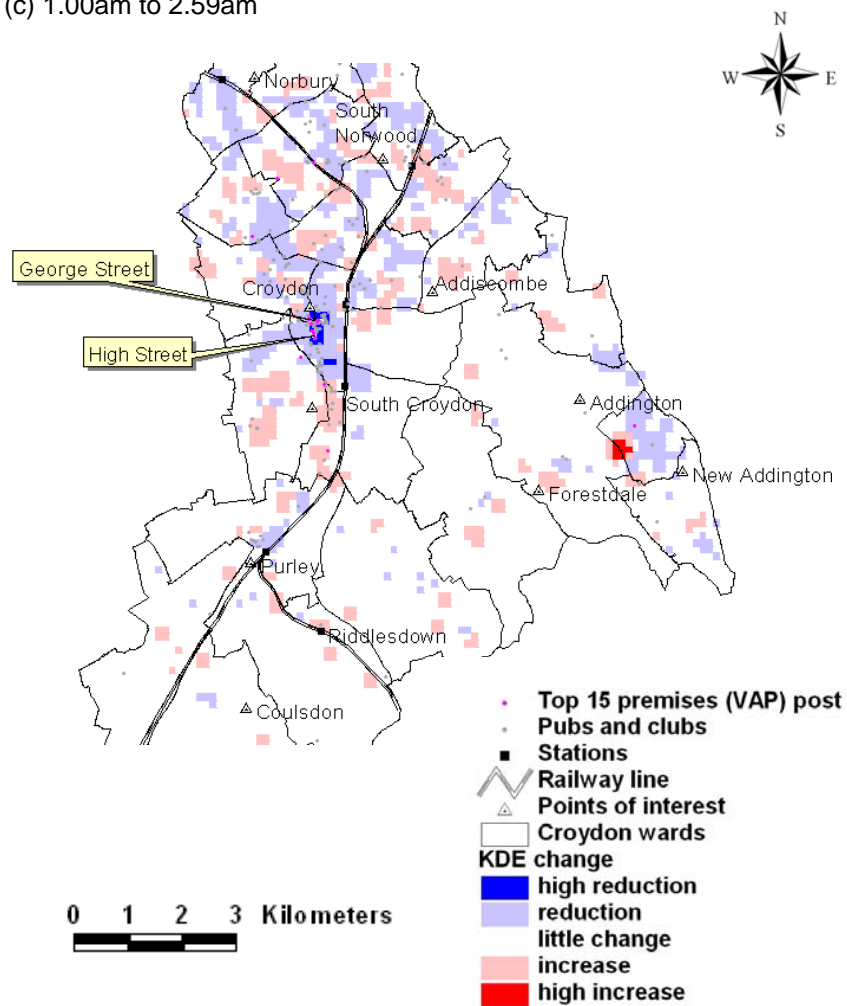


Figure 5.3 Average baseline to post implementation KDE synthesis change maps for Croydon (borough) for violence against the person

(c) 1.00am to 2.59am



(d) 3.00am to 4.59am

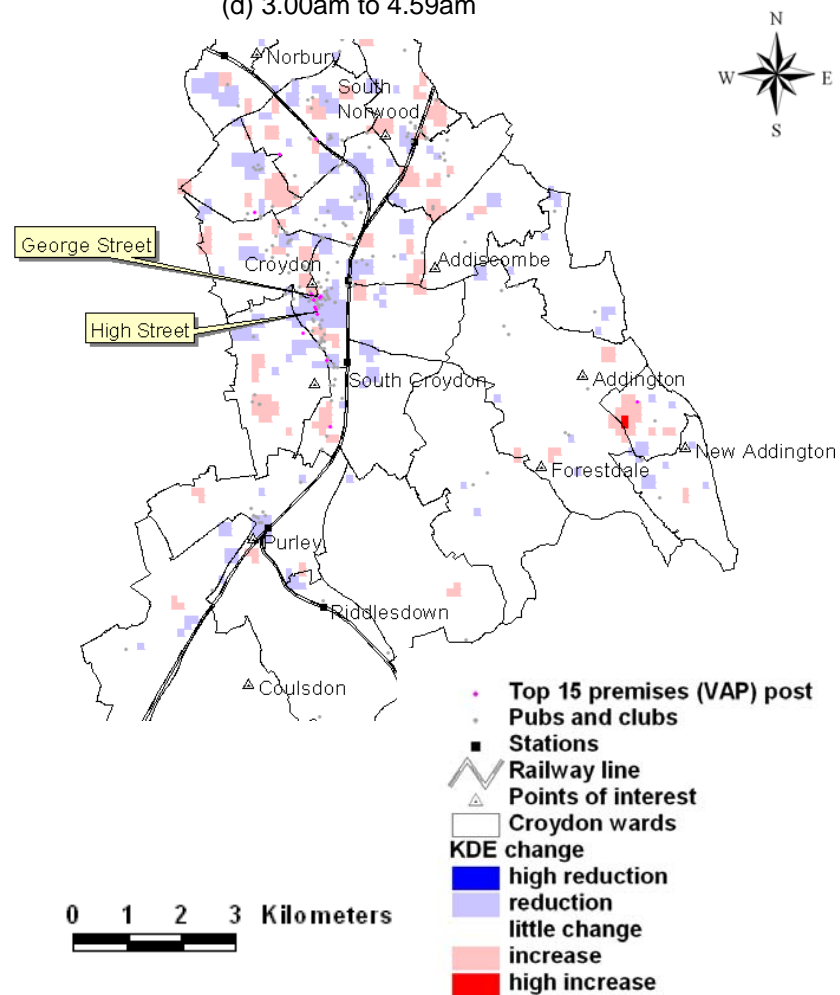
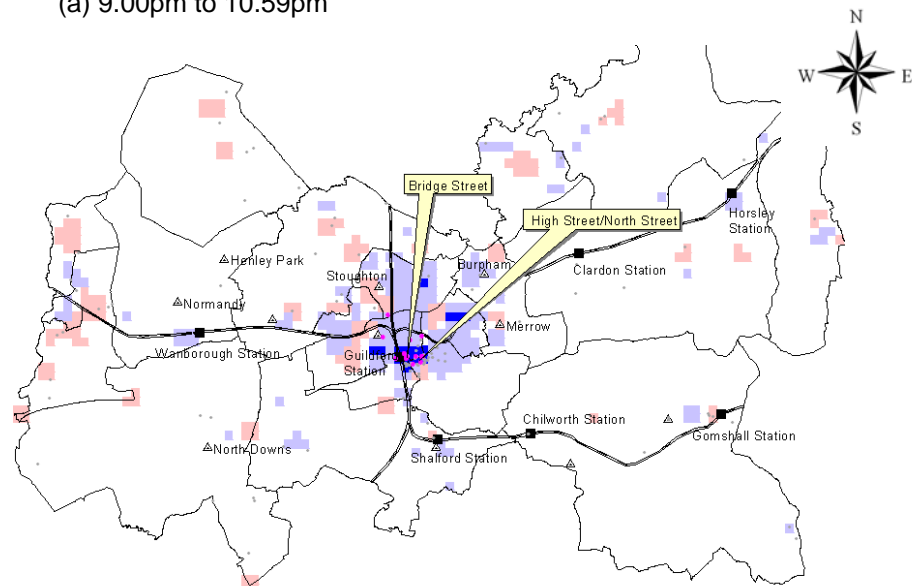


Figure 5.4 Average baseline to post implementation KDE synthesis change maps for Guildford (borough) for violence against the person

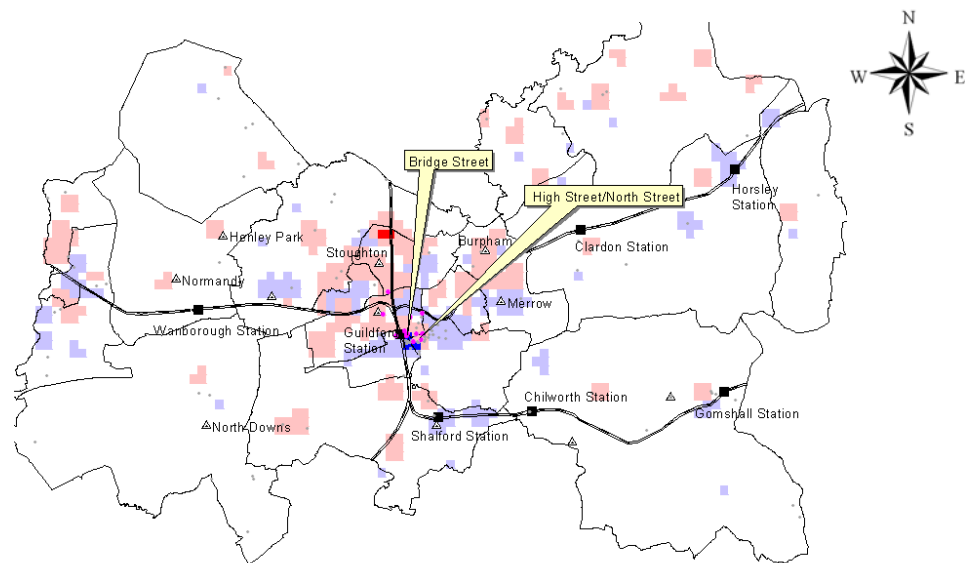
(a) 9.00pm to 10.59pm



- Top 15 premises (VAP) post
- Pubs and clubs
- Railway stations
- Railway line
- △ Points of interest
- Guildford wards
- KDE change
- no change
- reduction
- little change
- increase
- high increase

0 2 4 6 8 Kilometers

(b) 11.00pm to 0.59am

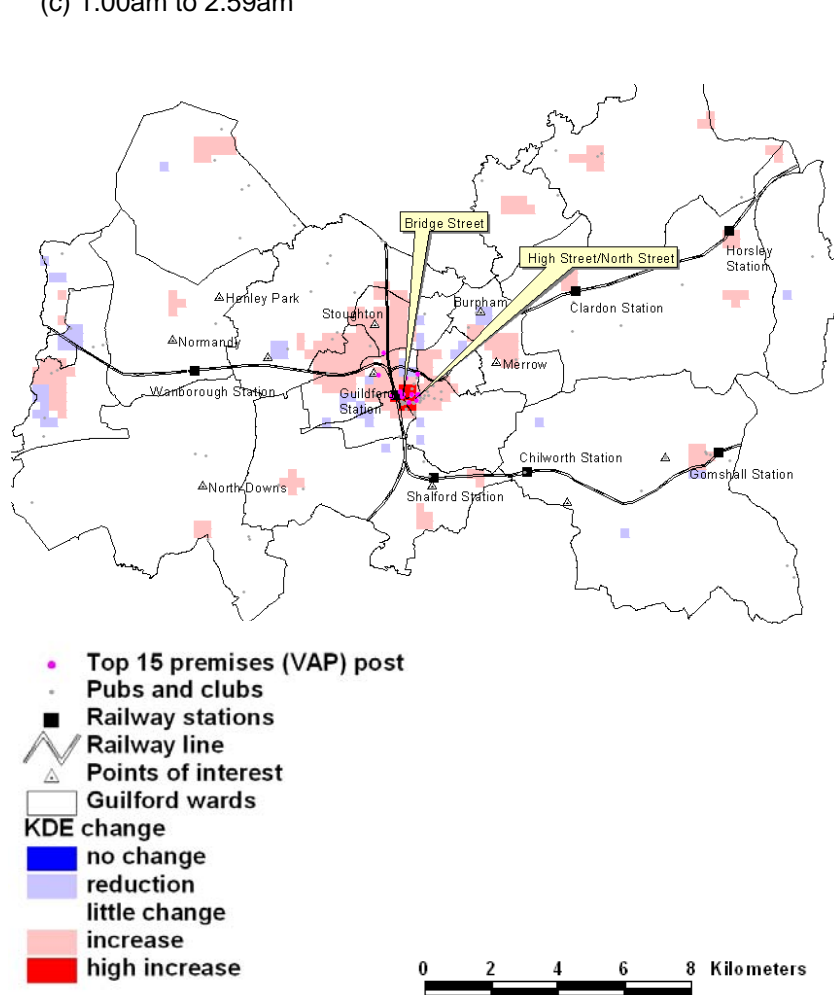


- Top 15 premises (VAP) post
- Pubs and clubs
- Railway stations
- Railway line
- △ Points of interest
- Guildford wards
- KDE change
- no change
- reduction
- little change
- increase
- high increase

0 2 4 6 8 Kilometers

Figure 5.4 Average baseline to post implementation KDE synthesis change maps for Guildford (borough) for violence against the person

(c) 1.00am to 2.59am



(d) 3.00am to 4.59am

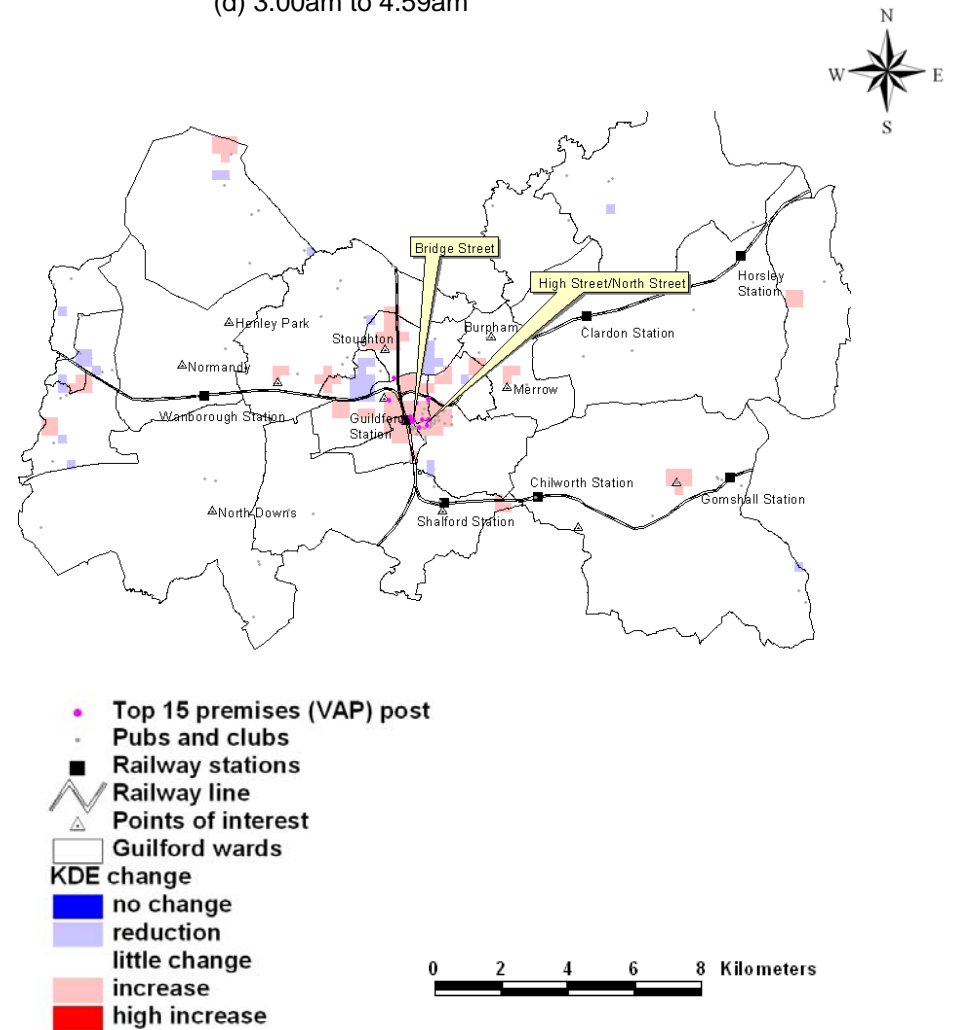
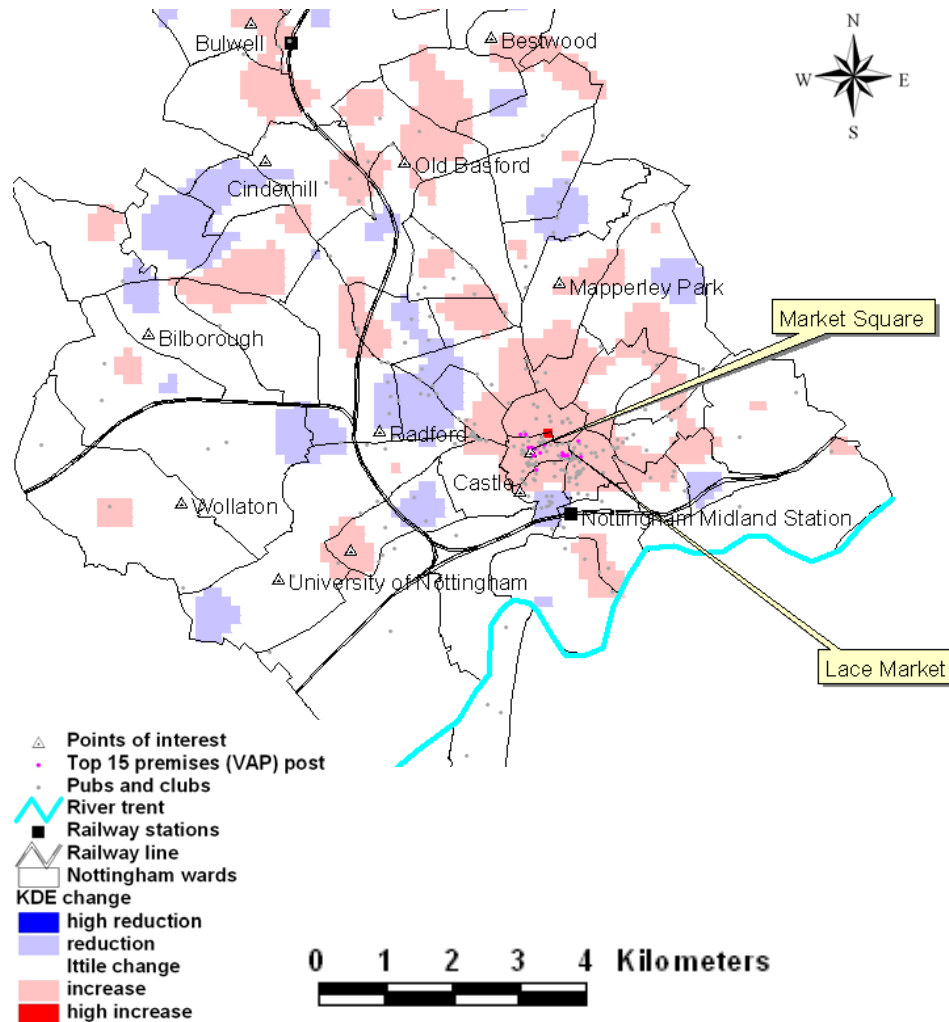


Figure 5.5 Average baseline to post implementation KDE synthesis change maps for Nottingham (UA) for violence against the person

(a) 9.00pm to 10.59pm



(b) 11.00pm to 0.59am

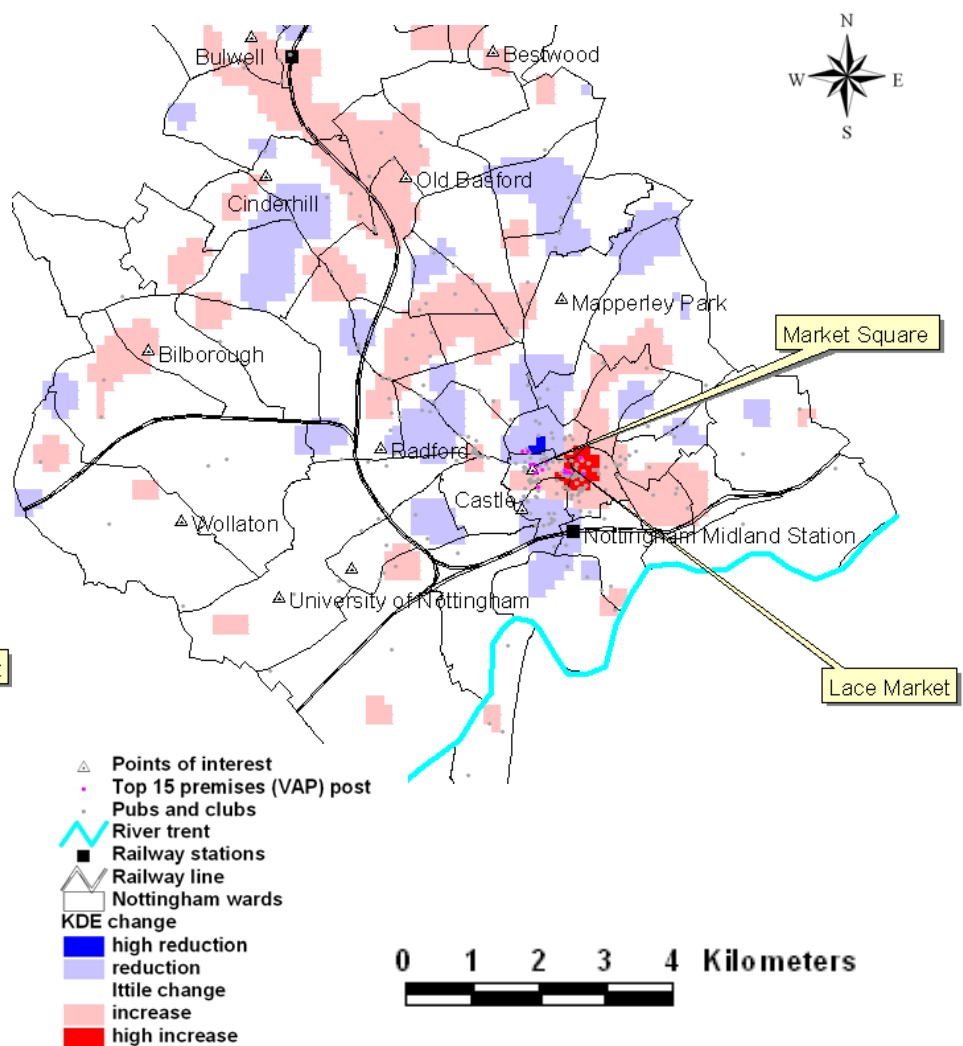
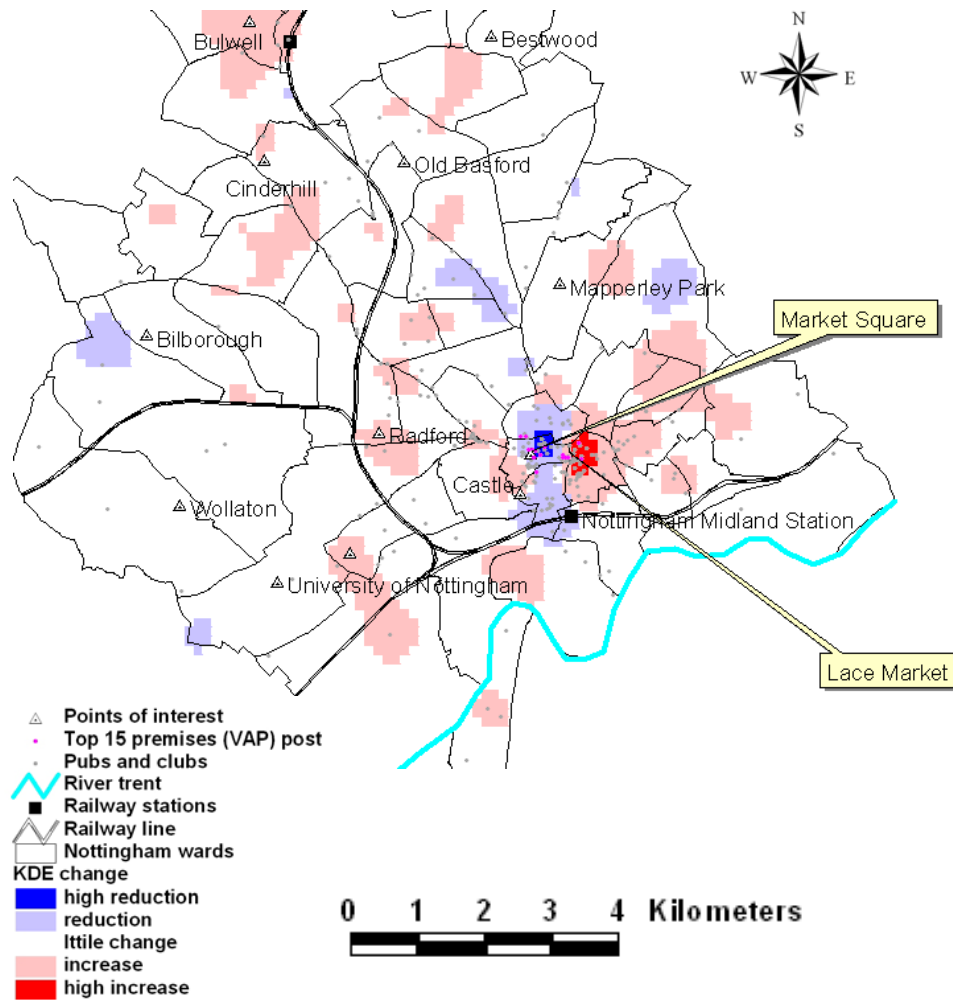


Figure 5.5 Average baseline to post implementation KDE synthesis change maps for Nottingham (UA) for violence against the person

(c) 1.00am to 2.59am



(d) 3.00am to 4.59am

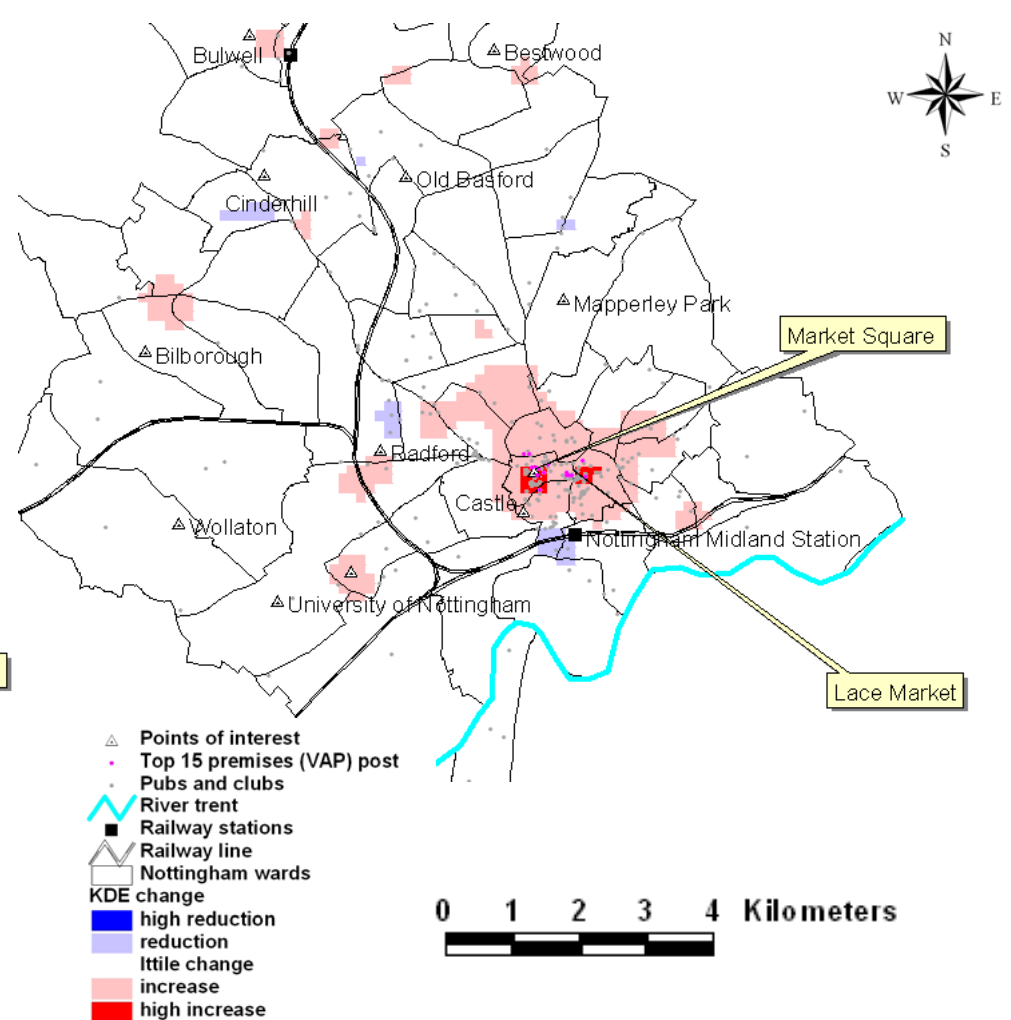


Figure 5.6 examines the change in spatio-temporal patterns of criminal damage in the baseline and post implementation periods, from 9.00pm through to 4.59am. Figures 5.7 through 5.10 depict these maps for Blackpool, Croydon, Guildford and Nottingham respectively.

In Birmingham there is a mixed picture from 9.00pm to 10.59pm, with some pockets of areas with high increases in criminal damage. These do not correspond with the main drinking areas and licensed premises. From 11.00pm to 0.59am there are some areas with high reductions, including Five-ways and to the east of the market. Also there are some increases further east of market and south of Hurst Street. From 1.00am to 2.59am, there are some pockets of high reductions including Hurst Street and Broad Street, and an increase further south of Broad Street. Between 3.00am and 4.59am there are pockets of areas with a high increase in criminal damage, including Hurst street, near Five-ways, east of market and south of New Street. These small changes are not highlighted in the time of day analysis in the Birmingham annex, and a number of changes to criminal damage tend to be at earlier times of the day than shown in these maps (when the Act is less likely to have an influence).

In Blackpool between 9.00pm and 10.59pm there is a mixed picture, with a number of areas showing increases and decreases in criminal damage. There are some very small pockets of areas with high concentrations of change (some increases and some reductions). None of these areas correspond with the key drinking areas. From 11.00pm to 2.59am there are some increases near Queen Street and reductions by Market Street. These changes are greatest in the 11.00 to 0.59am time period. Between 3.00am and 4.59am there is little evidence of change. There are some very small pockets of increases but these do not correspond to key drinking areas. The time of day proportional analysis in the Blackpool Annex does show some increases from 11.00pm to 11.59pm, and some reductions from midnight to 0.59, although these are not obvious in the hot spot change map (which covers the period 11.00pm to 0.59am).

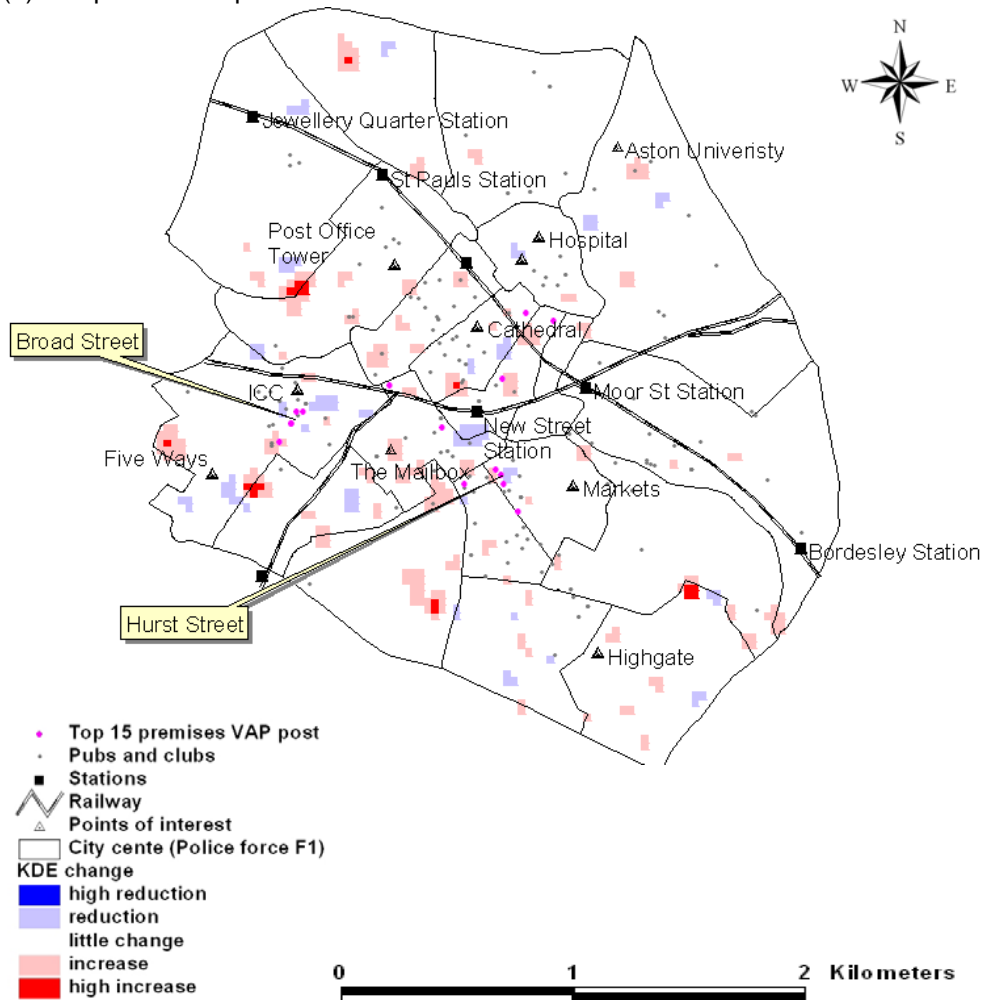
In Croydon, from 9.00pm to 10.59pm, there are predominantly reductions, especially around the town centre area. The only increases evident are in the Addington, New Addington, Forresdale area. This pattern is also very similar in the 11.00pm to 0.59am time period, although the focus of the reduction had shifted to the north of the town centre. From 1.00am to 2.59am reductions are again focussed around the town centre. The increase still evident in the Addington, New Addington, Forresdale area is less concentrated. From 3.00am to 4.59am there is very little change. These localised changes are not evident in the analysis by time of day in the Croydon annex.

In Guildford there were reductions focussed around town centre and key drinking areas (High Street, North Street and Bridge Street). From 9.00pm to 0.59am. These reductions were greatest between 9.00pm and 10.59pm. From 1.00am to 04.59 there was little change evident, although there were some increases in town centre area, which were more concentrated in the 1.00am to 2.59am time period. The time of day analysis in the Guildford annex found reductions from 9.00pm to 11.59pm, and small increases from midnight to 01.59am in criminal damage. Some of this change is reflected in the synthesis maps.

In Nottingham between 9.00pm and 10.59pm there was very little change, particularly around the city centre area. There was a small pocket of high increase between Bilborough and Cinderhill. From 11.00pm to 0.59am there were reductions around the city centre. There was also two areas with increases in criminal damage, one between Bilborough and Cinderhill and one to the east of city centre. From 1.00am to 2.59am there was little evidence of change, although there were some reductions around the city centre. From 3.00am to 4.59am there were increases around the city centre, and these were focussed in Lace Market and Market square areas. The time of day analysis in the Nottingham analysis showed reductions from 11.0pm to 11.59pm in areas near licensed premises, and increases from 3.00am to 3.59am. These changes are also partially evident in the hot spot synthesis maps.

Figure 5.6 Average baseline to post implementation KDE synthesis change maps for Birmingham (police Force F1) for criminal damage

(a) 9.00pm to 10.59pm



(b) 11.00pm to 0.59am

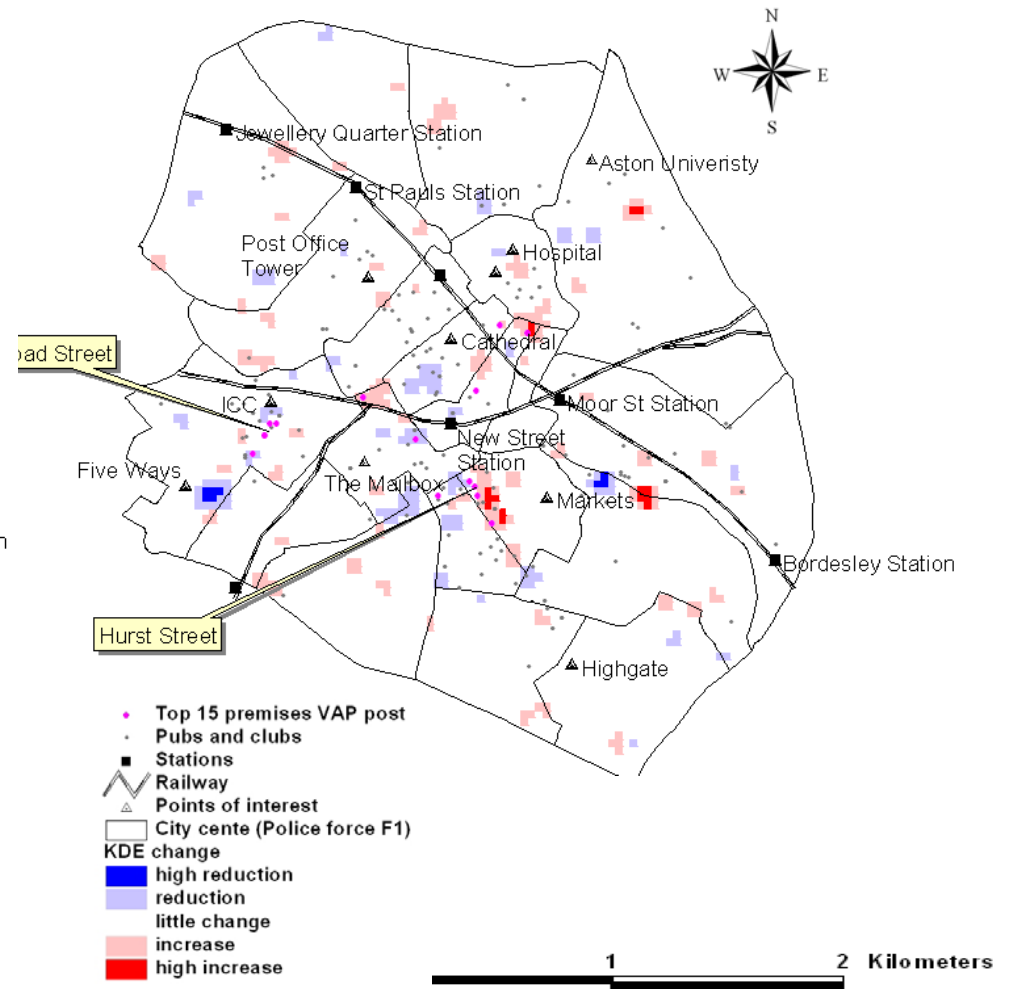
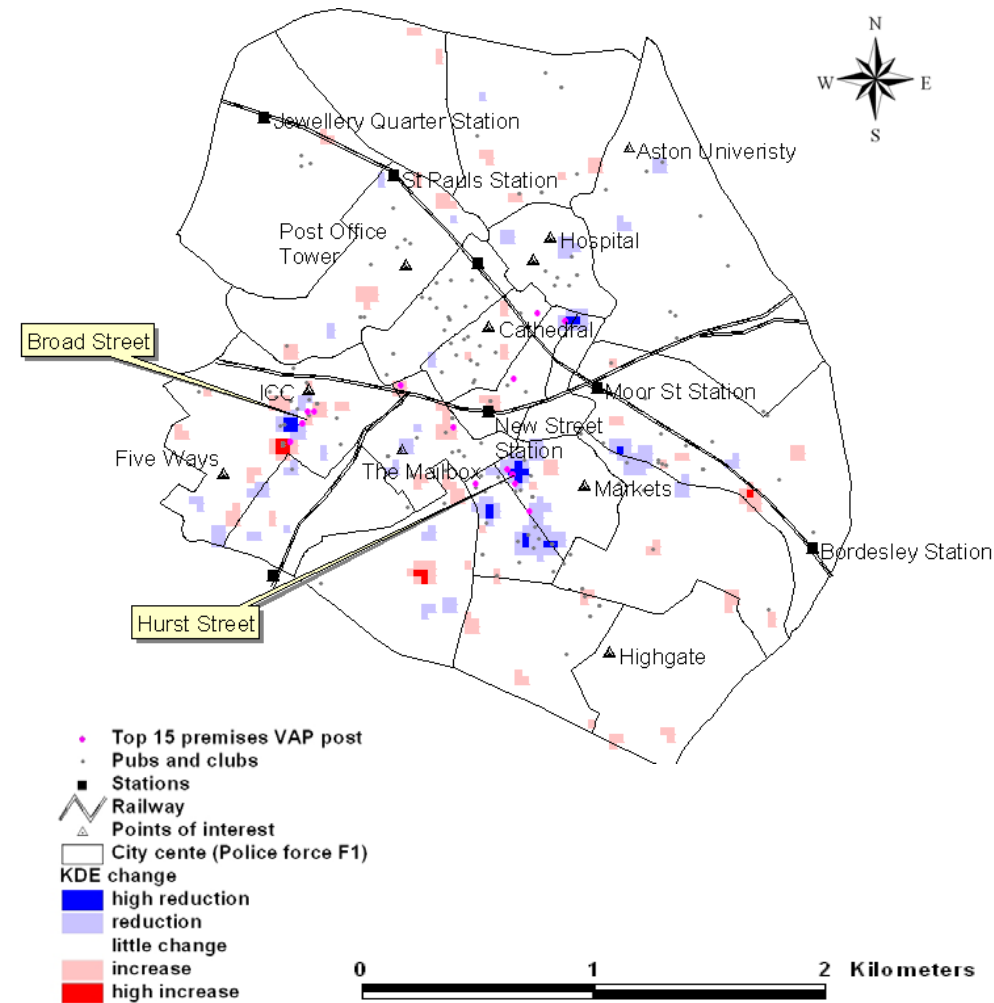


Figure 5.6 Average baseline to post implementation KDE synthesis change maps for Birmingham (police Force F1) for criminal damage

(c) 1.00am to 2.59am



(d) 3.00am to 4.59am

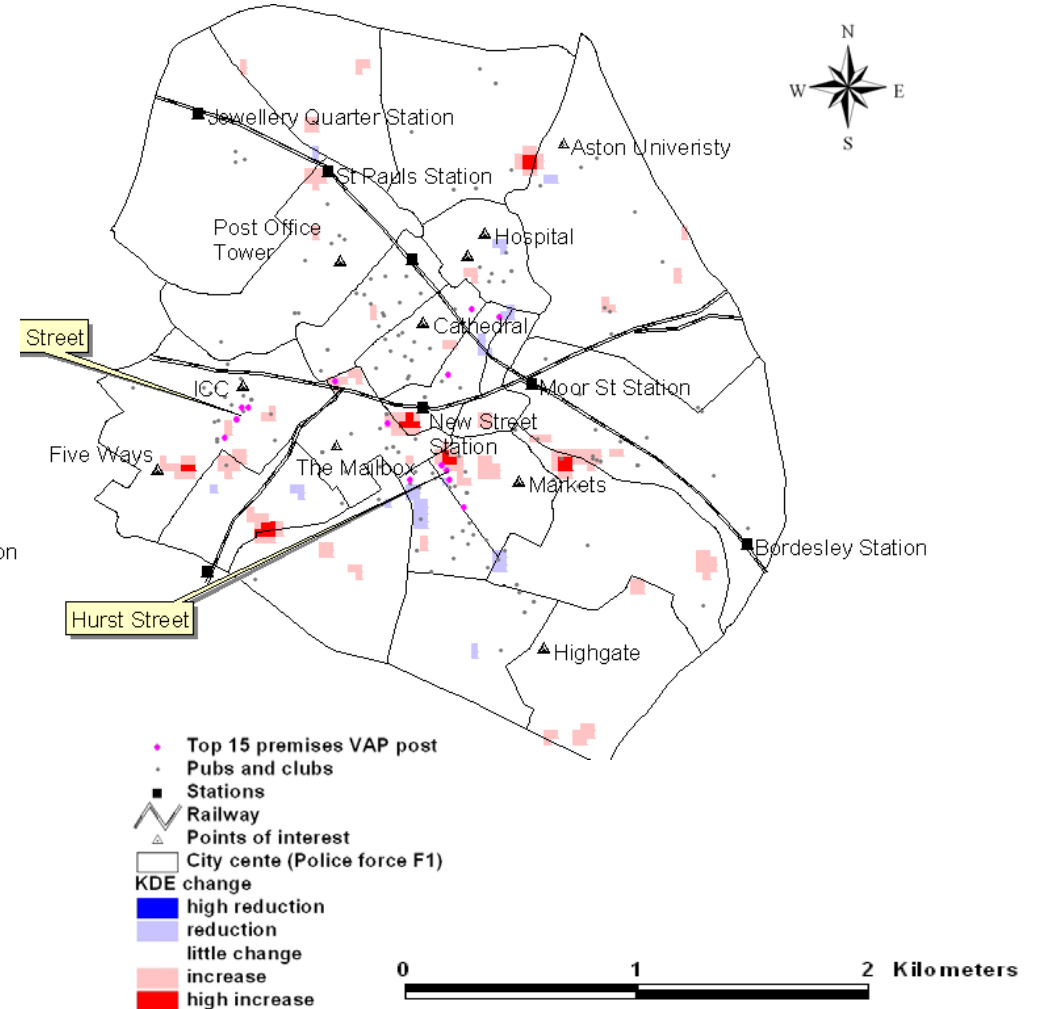
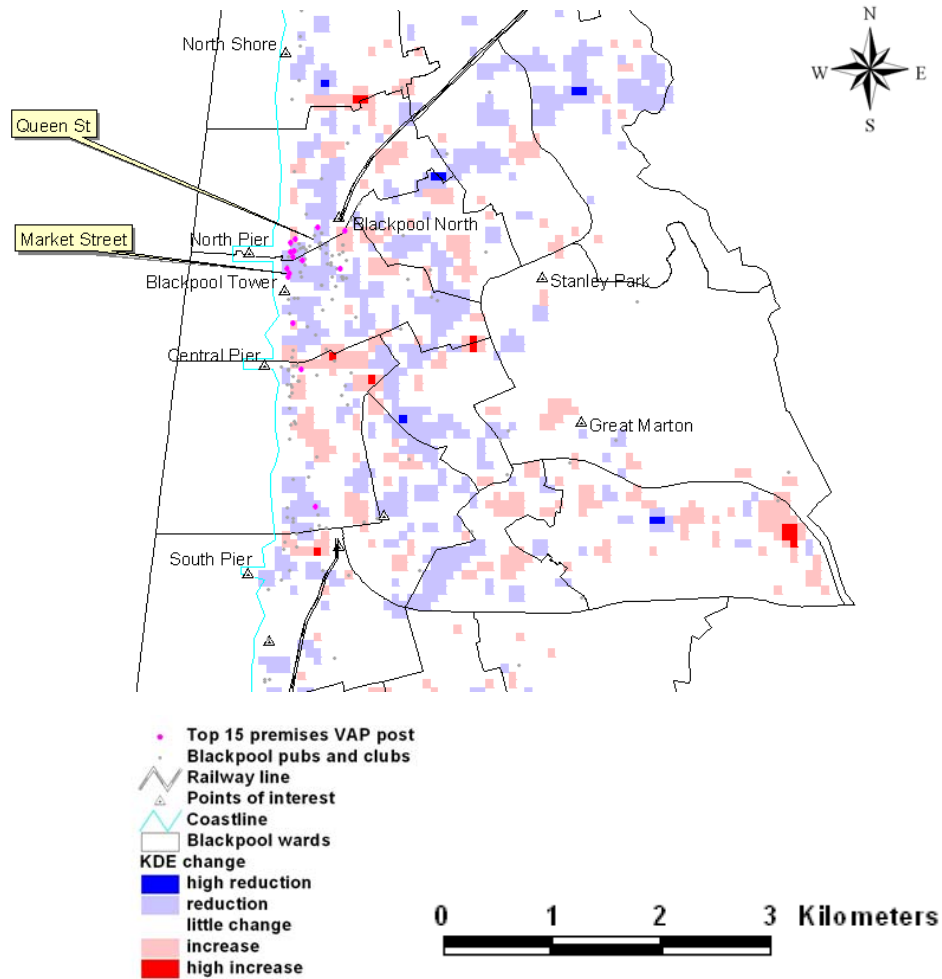


Figure 5.7 Average baseline to post implementation KDE synthesis change maps for Blackpool (UA) for criminal damage

(a) 9.00pm to 10.59pm



(b) 11.00pm to 0.59am

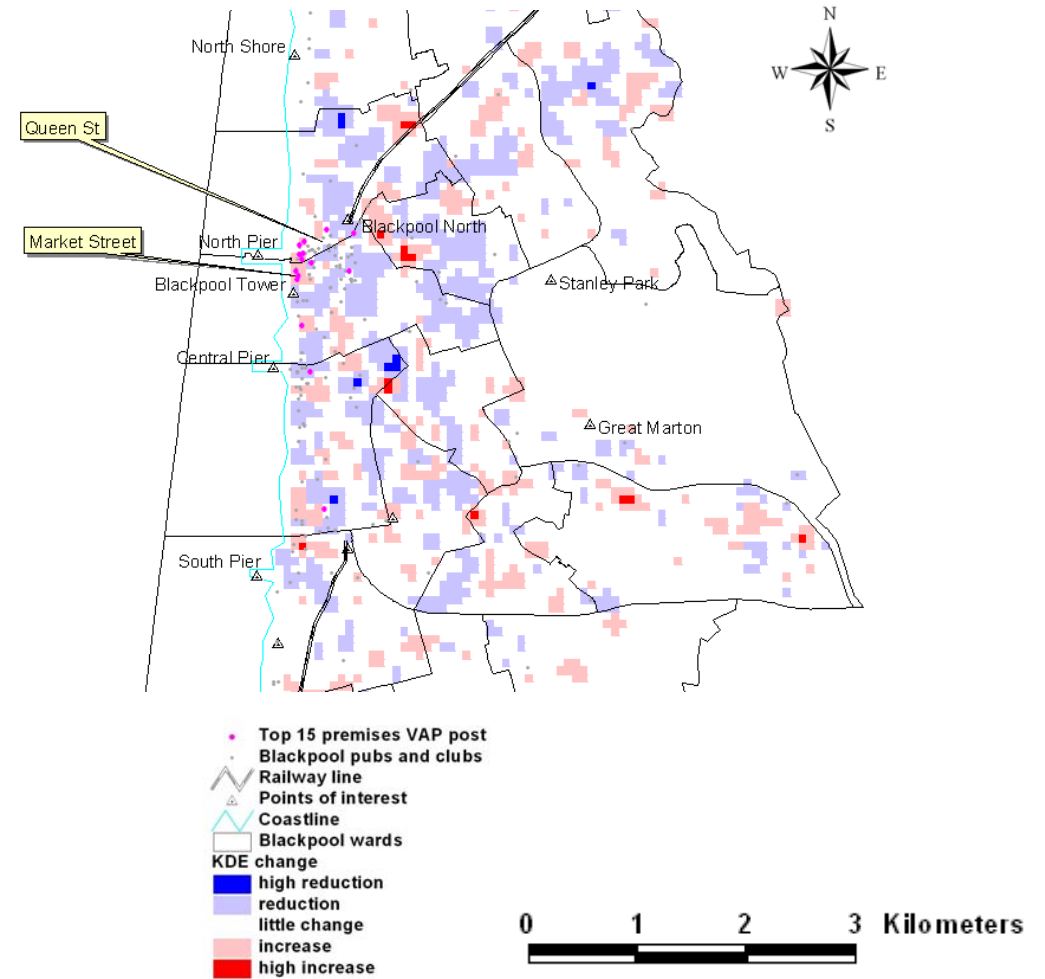
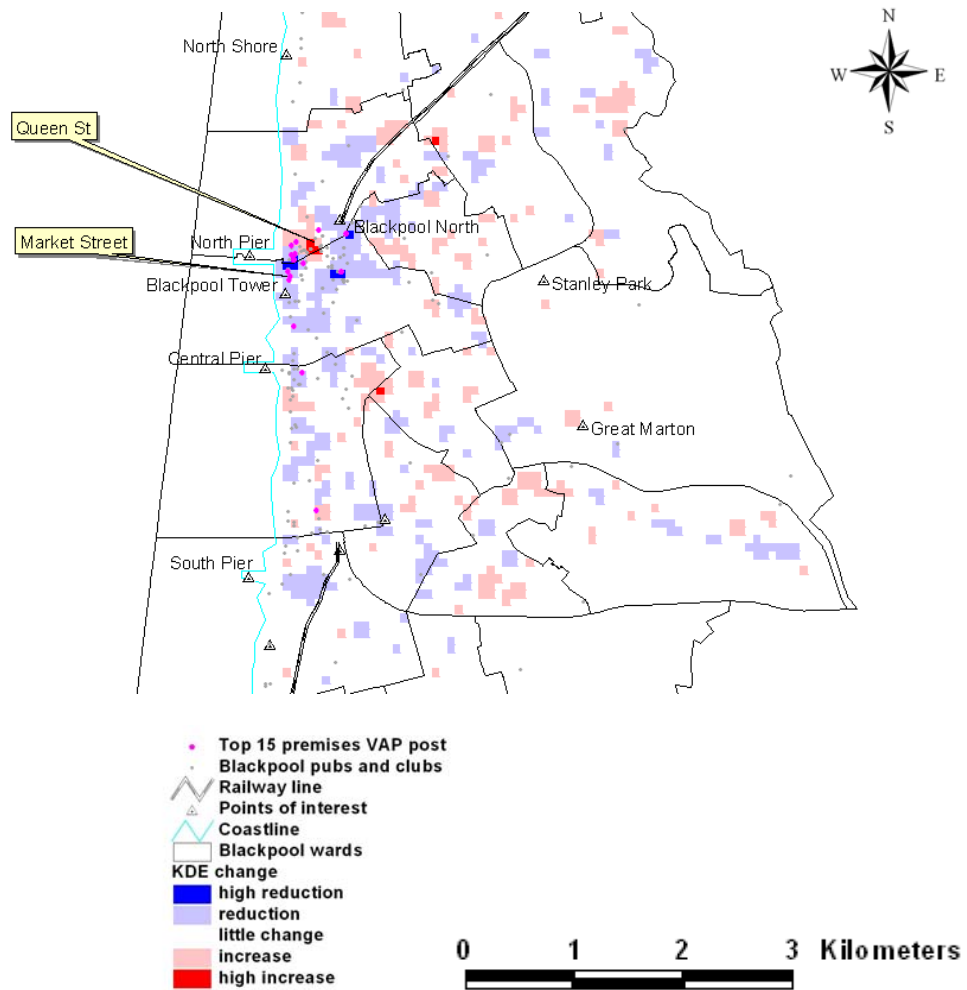


Figure 5.7 Average baseline to post implementation KDE synthesis change maps for Blackpool (UA) for criminal damage

(c) 1.00am to 2.59am



(d) 3.00am to 4.59am

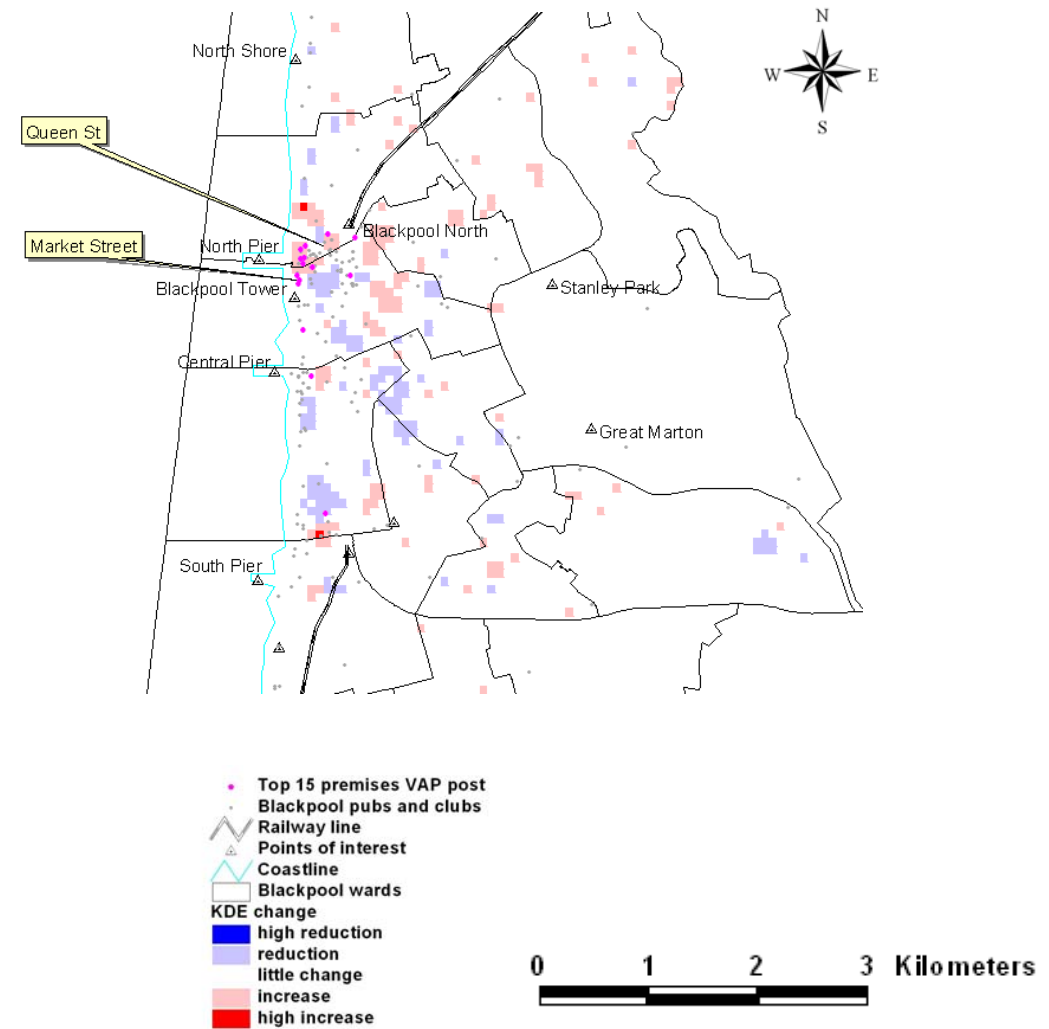
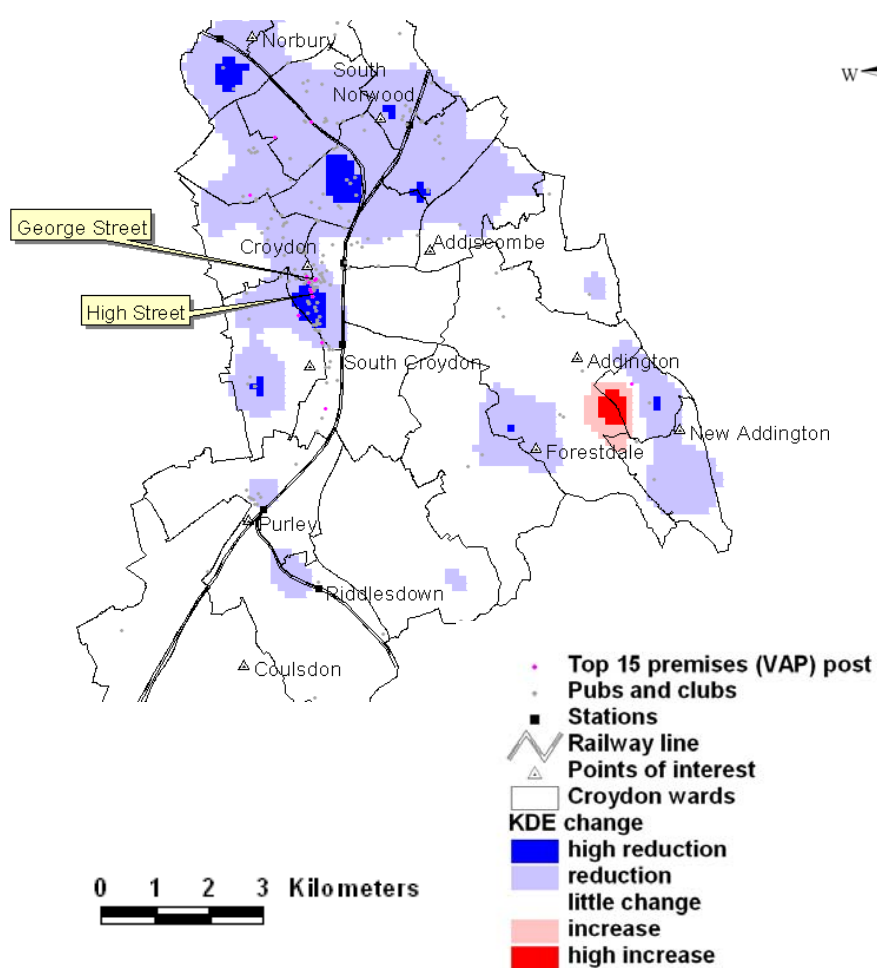


Figure 5.8 Average baseline to post implementation KDE synthesis change maps for Croydon (borough) for criminal damage

(a) 9.00pm to 10.59pm



(b) 11.00pm to 0.59am

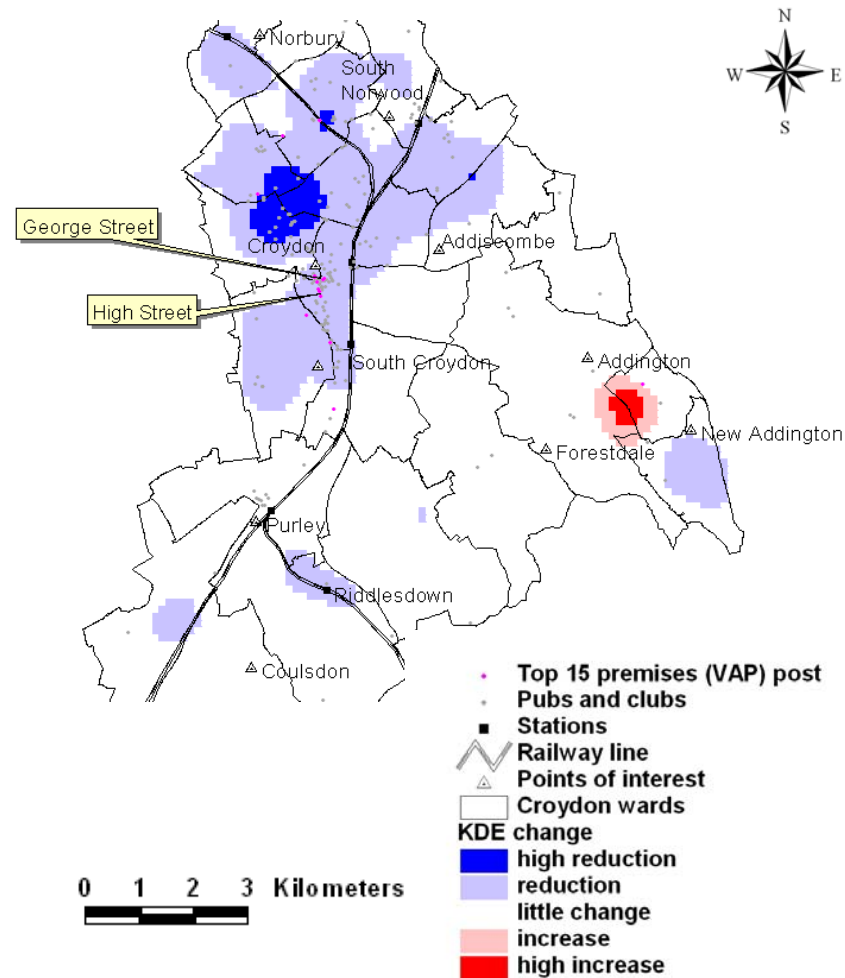
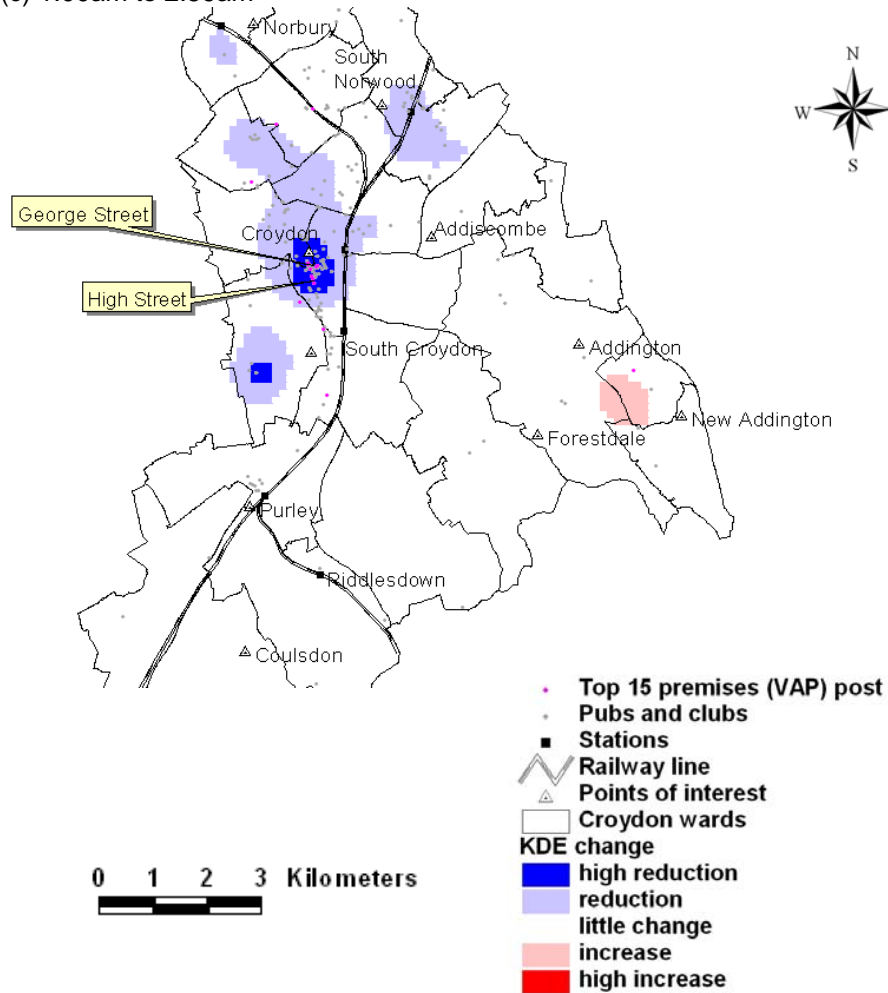


Figure 5.8 Average baseline to post implementation KDE synthesis change maps for Croydon (borough) for criminal damage

(c) 1.00am to 2.59am



(d) 3.00am to 4.59am

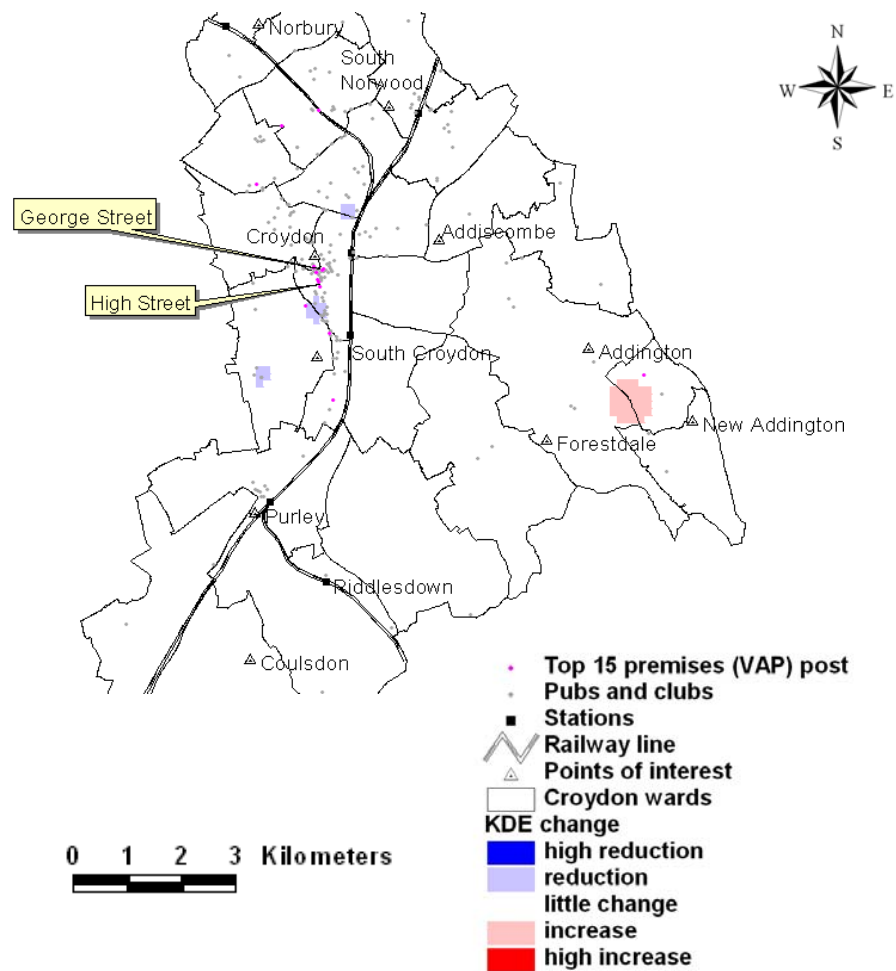
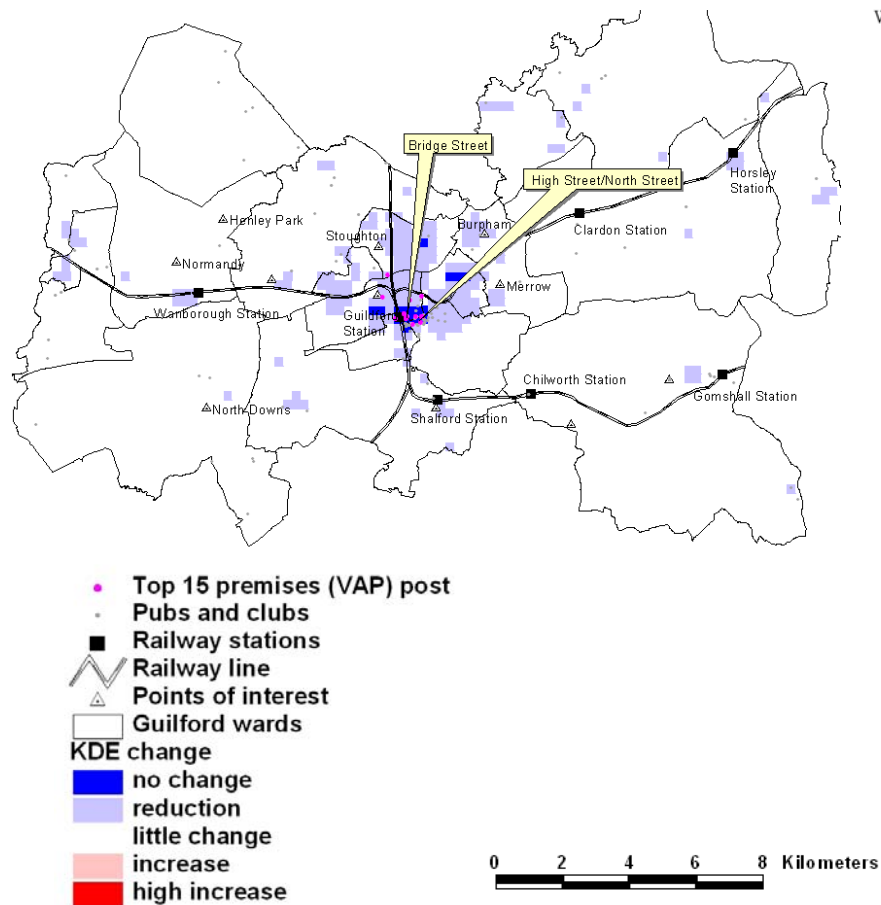


Figure 5.9 Average baseline to post implementation KDE synthesis change maps for Guildford (borough) for criminal damage

(a) 9.00pm to 10.59pm



(b) 11.00pm to 0.59am

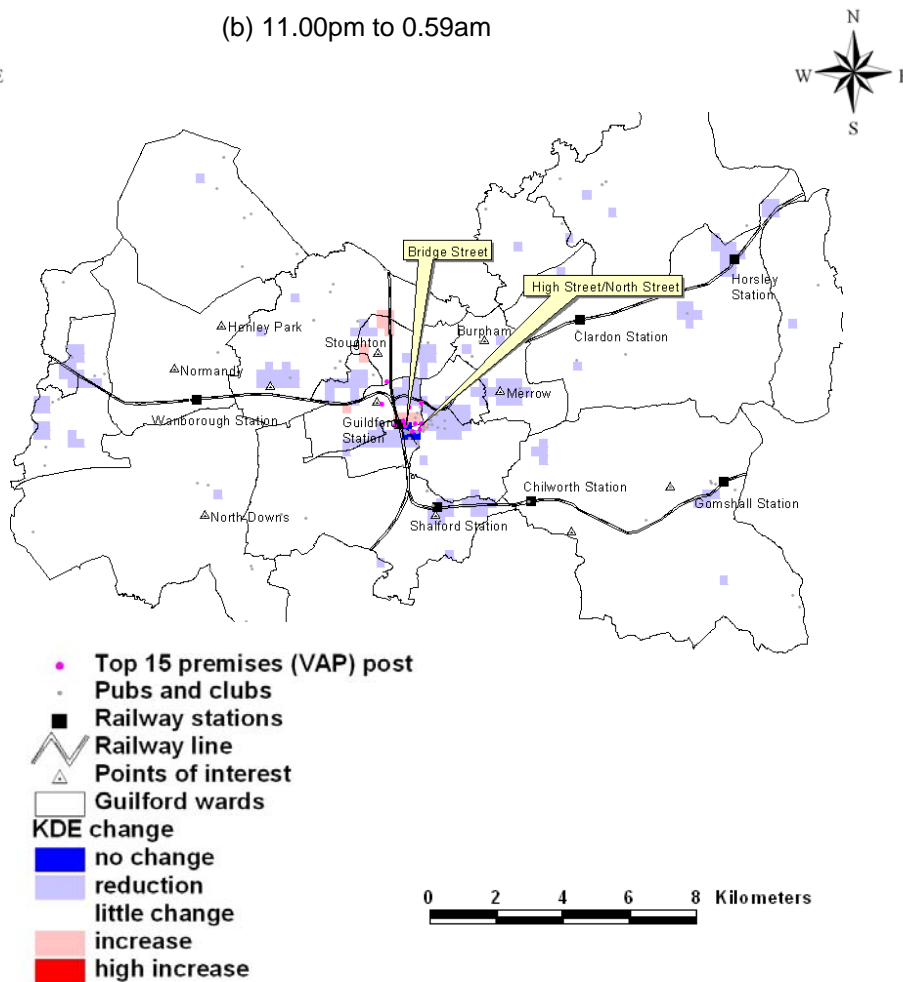
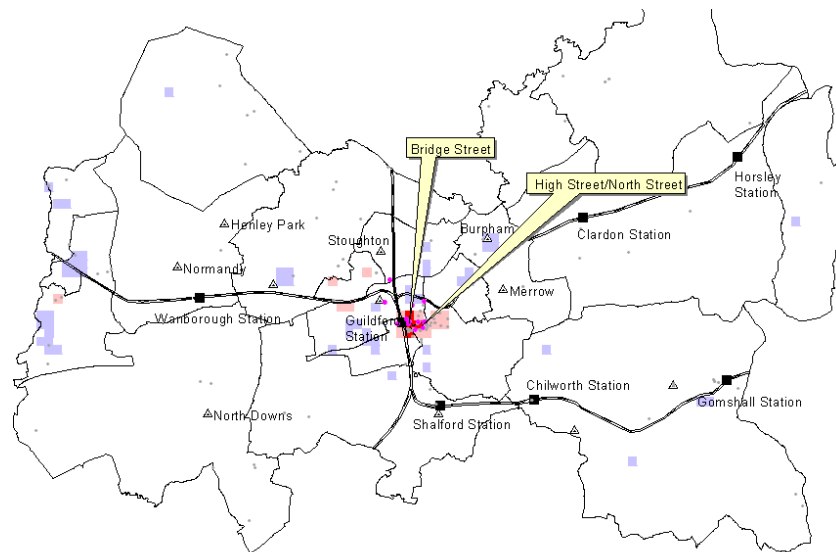


Figure 5.9 Average baseline to post implementation KDE synthesis change maps for Guildford (borough) for criminal damage

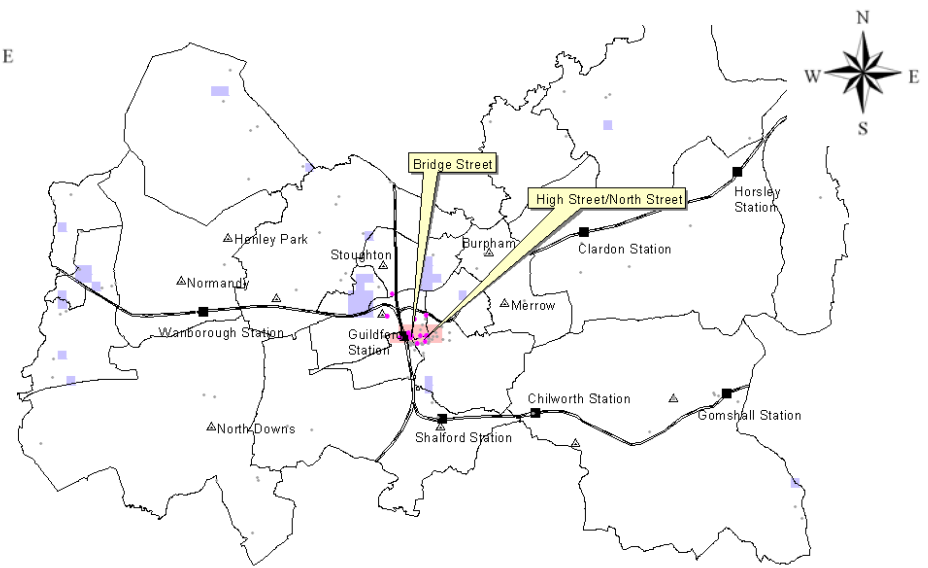
(c) 1.00am to 2.59am



- Top 15 premises (VAP) post
- Pubs and clubs
- Railway stations
- Railway line
- △ Points of interest
- Guildford wards
- KDE change
- no change
- reduction
- little change
- increase
- high increase

0 2 4 6 8 Kilometers

(d) 3.00am to 4.59am

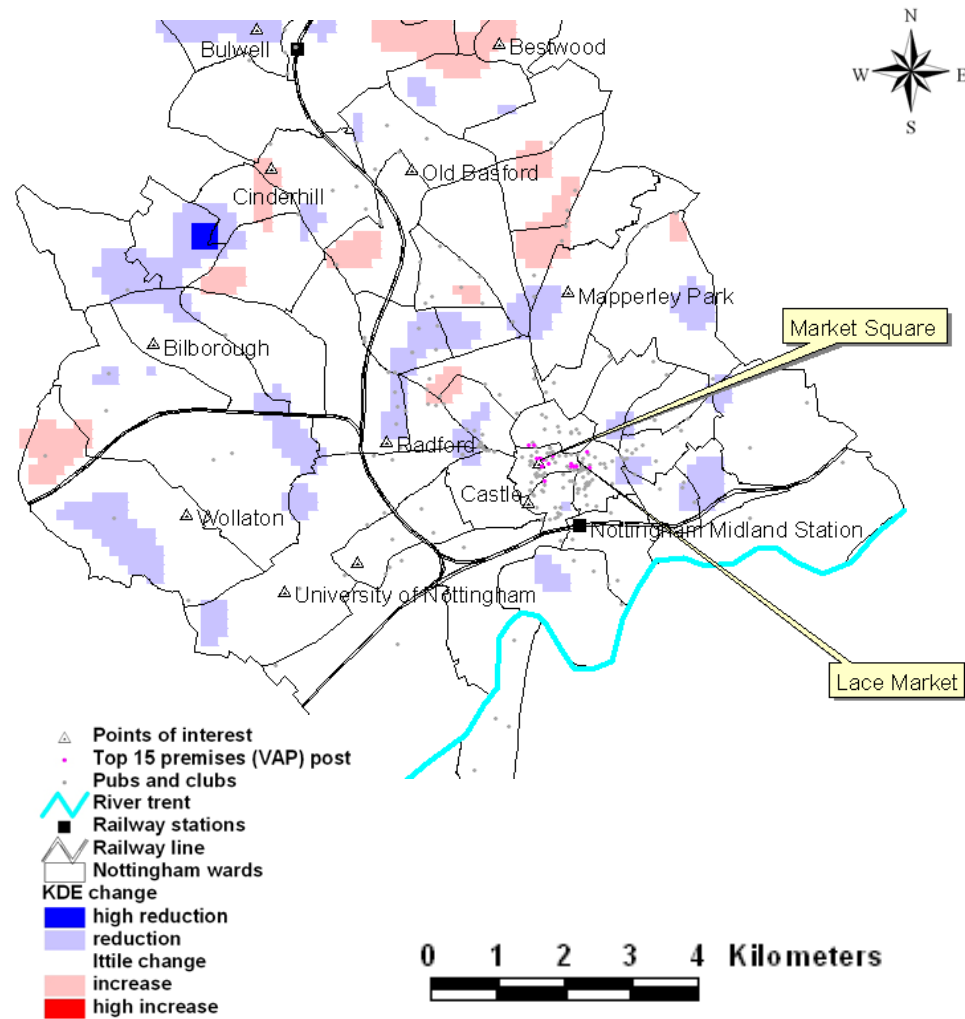


- Top 15 premises (VAP) post
- Pubs and clubs
- Railway stations
- Railway line
- △ Points of interest
- Guildford wards
- KDE change
- no change
- reduction
- little change
- increase
- high increase

0 2 4 6 8 Kilometers

Figure 5.10 Average baseline to post implementation KDE synthesis change maps for Nottingham (UA) for criminal damage

(a) 9.00pm to 10.59pm



(b) 11.00pm to 0.59am

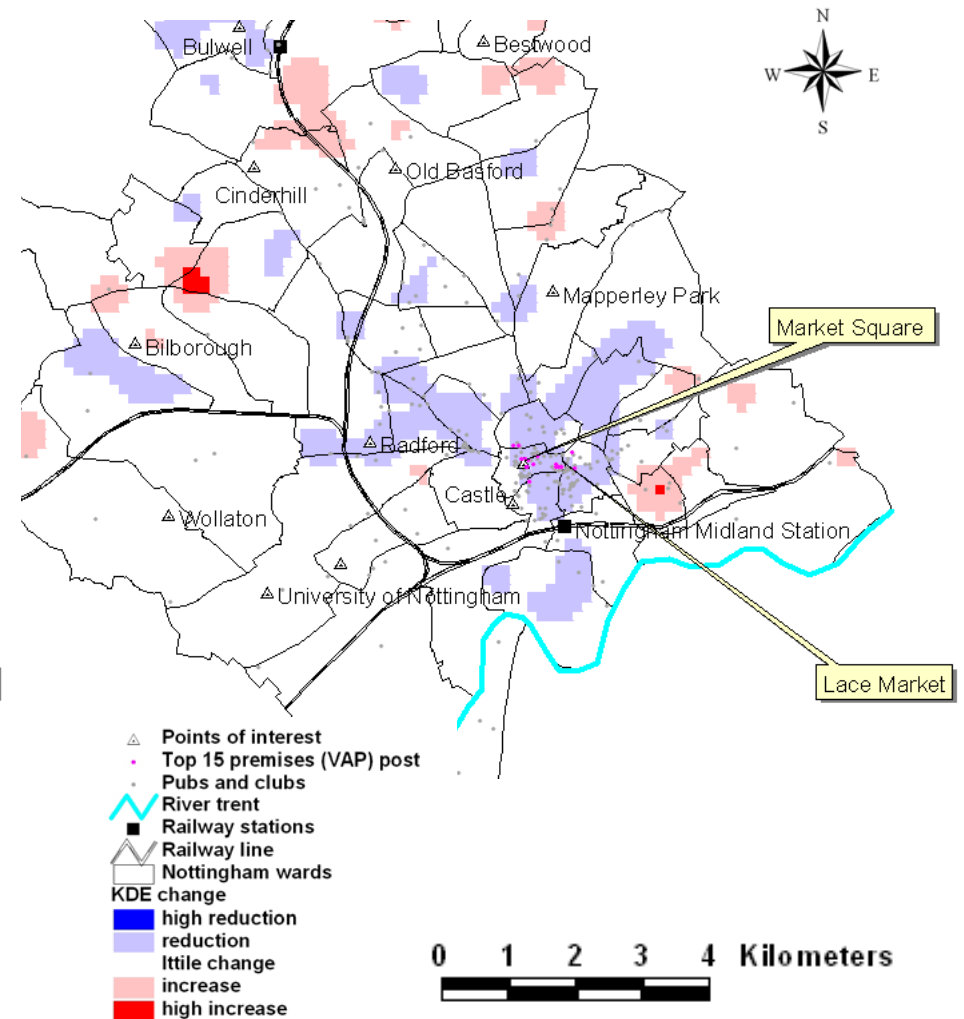
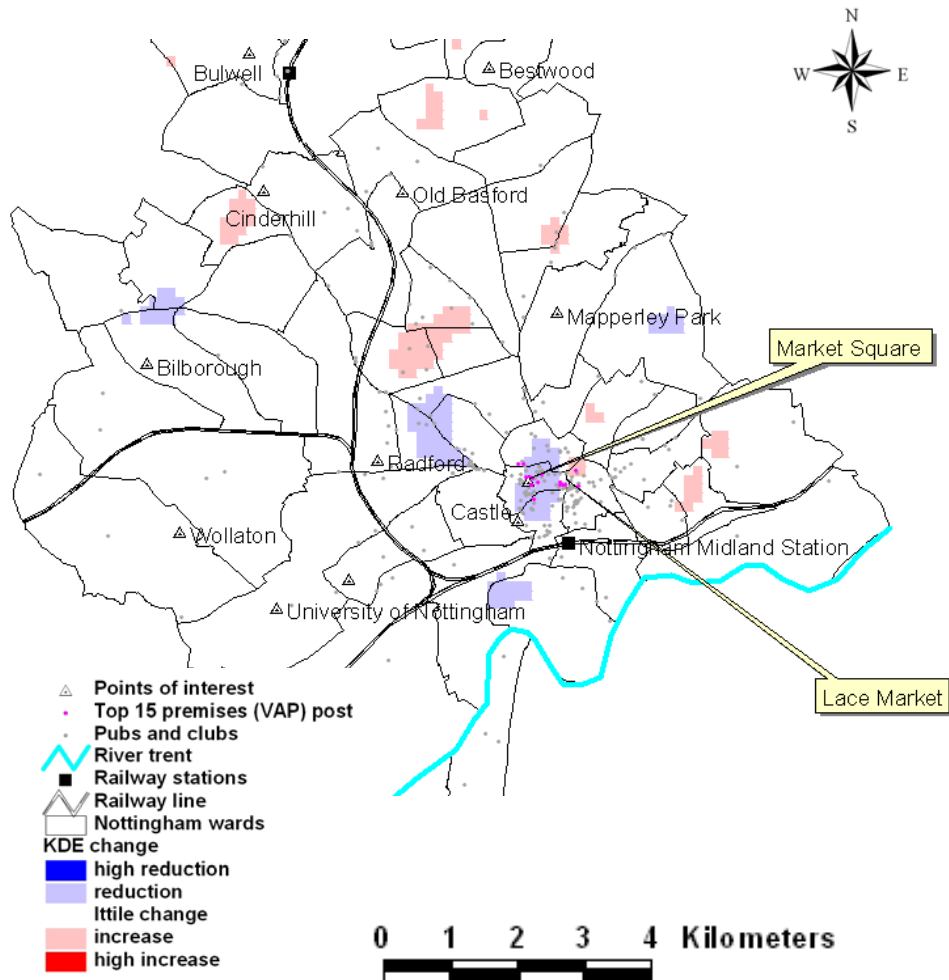
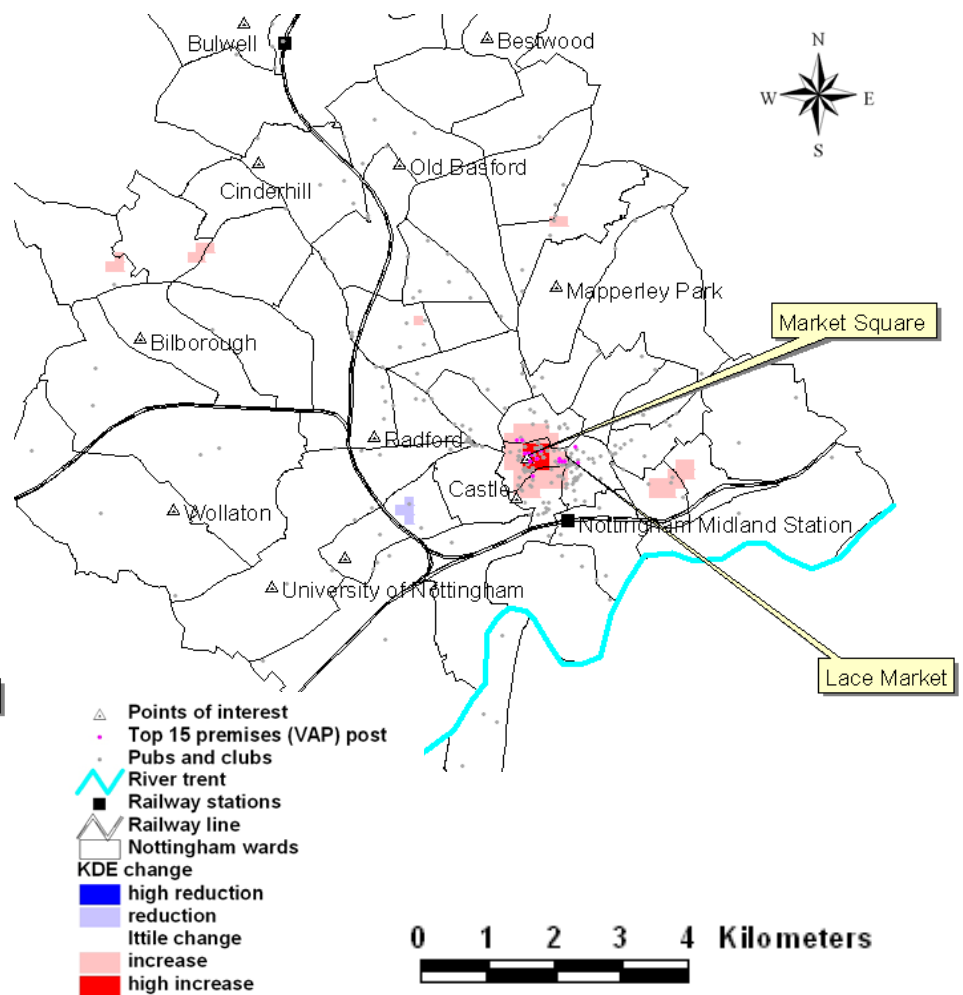


Figure 5.10 Average baseline to post implementation KDE synthesis change maps for Nottingham (UA) for criminal damage

(c) 1.00am to 2.59am



(d) 3.00am to 4.59am



6. Overall discussion

This supplementary annex has considered a number of additional findings that should be seen as complementary to the analysis in the five individual case study annexes. It is essential that the findings presented here are not viewed in isolation, but considered alongside all other findings from both the quantitative and qualitative analysis that has been carried out.

In light of this, the implications of these findings are discussed in more detail in the final report. They are also included in the summaries and concluding remarks of each individual case study annex. To avoid duplication of text, the findings of the supplementary analysis are not summarised here. Instead, the reader is first referred to the final report, which discusses in depth the implications of these findings in conjunction of all the findings undertaken in this research. In addition summaries are presented in each individual case study annex.